



Computer Weekly

Thursday, August 18, 1983

PT7 cuts costs

FERRANTI Computer Systems



BLECHNER... Policy of growth by purchase.

Rising Star makes a million

by Kevin Cahill
AMID reports of a major software acquisition, Star Computers has passed the £1 million mark in pre-tax profits.

Figures from the company, based in the East End of London, show that profits rose to £1,070,000 before tax for the year ended April 30, against £822,000 for the previous year.

David Blechner, the Star Group managing director, notes that the former Australian computer group Hartley, which Star acquired last year, has moved into profit.

The UK end of Hartley, which had a user base of over 400, came on to the market after a cash flow crisis wiped out the parent company, which was Australia's only computer producer.

The demise of Hartley caused a major industry/political row in the Antipodes with accusations against banks and government over failure to support the company.

The Australians' bad luck has, however, played a significant part in improving turnover at Star by 52% to £6.1 million from last year's £4.04 million.

Blechner and joint managing director Jack Schumann acquired Hartley, principally for shares, and the Star Group's cash position remains strong.

Star has been able to increase its R&D activities significantly.

During the year the company acquired a peripheral distributor, and the projected acquisition, thought to be a software house, continues a policy of growth by purchase which Blechner gave as his principal reason for taking Star on to the Stock Market last year.

The target this time is thought to be software house Tabs.

'We've fallen flat on our face' says ITCS boss

Creditors queue at micro maker

by John Riley
UK microcomputer manufacturer ITCS is in deep financial trouble. Last March the company announced a £500,000 cash injection, a £10 million Middle East order, and a new factory in Ashford, Middlesex, to manufacture micros in its Andromeda range. Now the factory is depleted, most of its workforce laid off, and creditors from across the computer industry are queuing up for money allegedly owed to them.

Just two months ago ITCS announced a new portable microcomputer, the Andromeda Zita B, which it claimed would be in production by September. But even then suppliers were suspending shipments for alleged non-payment.

Nevin Development Systems, which supplied the drive boards for the display and which says it is still owed £11,000, is one. "It was obvious they weren't manufacturing the goods for which we were suppliers so we suspended shipments," said Nevin marketing manager Neil Barker.

Peerless Foani Mouldings, which supplies cabinets for 40% of UK computer manufacturers, says it is owed £7,000 and put ITCS on "permanent stop" some time ago.

Among the other creditors are about 20 of the workforce whose wages have not been paid, the equipment service case supplier left in ITCS, sales manager Mike

Schroff which says is owed about £9,000, the main board supplier Rade Systems which says it is owed £25,000 and software house Tamsys which is owed "an amount we would prefer not to lose".

The Fraud Squad of the Metropolitan Police has confirmed that it has received a letter about ITCS.

David Simon, managing director of Rade Systems, is co-ordinating legal action by the creditors and has employed a solicitor who specialises in computer cases to bring about a winding-up of ITCS by the creditors to by-pass the process of claiming via the judicial process. "If people don't act this sort of thing will happen time and time again. I invite all creditors who want to join me to contact me on 01-451 4414."

Reubin Joseph, group chairman of Nevin Electrical, said: "I saw little point in spending money chasing the debt because ITCS' premises are gutted, but I would join in with Rade."

"We've fallen flat on our face", admitted David Lewis-Pryce, managing director of ITCS last week. He claimed that there would be "no outstanding debts."

He blamed the lack of success on individuals within the company, and said he planned to continue producing the micros using sub-contractors.

The only other senior manager left in ITCS, sales manager Mike

Hoile, said last week that the company was trying to raise about £100,000. He blamed the problems in the company on "unpalatable penalties" imposed by financiers.

Lewis-Pryce claims that there is a distinction between Information and Technology Computer Services Ltd and ITCS Ltd, the former being the manufacturing arm, which has hit trouble, and the latter the marketing arm which is still viable.

Last February, Lewis-Pryce announced a £10 million export order to the Middle East for his Andromeda series of micros. About 500 machines were to go to leading Saudi Arabia distribution company YBA Kanoo, and the deal was welcomed by John Butcher, Junior Minister at the Department of Industry, who said the Andromeda could be expected to achieve significant worldwide sales.

A spokesman for Key Information Technology of Dubai, which handles computers for YBA Kanoo, confirmed there had been an order but said it had not been for £10 million, and the company had not yet received any microcomputers.

There are reports from two sources who believe that ITCS was offered a substantial government grant, but the Department of Industry had no comment to make on this.



LEWIS-PRYCE... "There will be no outstanding debts."

Council workers black computer supremo

by John Riley
WORKERS at Greenwich Borough Council have blacked their new computer boss, Frank Reeves.

Members of two trade unions are not allowed to work with him and telephonists will not route calls to him.

Reeves' newly created position of director of data and information processing has not been recognised by either the National and Local Government Officers Association (NALGO) or by the Association of Clerical, Technical and Supervisory Staff (ACTSS) since it was established on May 3.

The unions argue they have not been consulted about re-organisation, while the council argues that the re-organisation has not yet taken place.

"The specific dispute is that the Council re-organised its computer facilities with a new department and head without going through

the normal consultative procedures with the unions," claimed NALGO spokesmen.

The council wants a blueprint for the re-organisation to be decided by the specialist who is going to run it and then have the consultation.

"We need a senior person to plan what we're going to do," explained an council spokesman, "we've adopted normal procedures and made an appointment."

The re-organisation is necessary to replace antiquated equipment left over from when the Greenwich-based London Borough Joint Computer Consortium was disbanded about three years ago.

The unions are demanding that the job is re-advertised, and that the council consults them over the new structure of the department.

The separate issue of making a new technology agreement guaranteeing no overall job loss has also figured in the dispute.

32-bit supermicro is on the way too

Lookalike for Lisa from ICL

by Kevin Cahill
ICL is planning a major move at the lower end of its range with a Lisa lookalike for the end of the year, and a 32-bit supermicro to follow.

The Lisa-like machine, which is being prepared with the help of Logica and a number of other software houses, will be introduced to the market later this year, or early next year, according to sources close to the company.

The price is expected to undercut the Apple product substantially, reflecting a widespread industry view that the Lisa, while innovative in concept, is very overpriced at £8,000.

ICL is staying close-mouthed about the precise plans for the new product, but industry analysts are talking about a price around £2,000.

The year-end straddle for the Lisa gives ICL plenty of time to study the market acceptance for Lisa, and to adapt both price and hardware plans accordingly.

Mr Sharpe, computer industry spokesman for brokers Wood Mackenzie, says the introduction of an integrated workstation like the Lisa would come as no surprise to him and the notes that ICL still has to introduce the ICL Sinclair all-

in-one flat screen phone-based workstation. (See Company News, page 6).

All this adds up to a major drive by ICL to expand the lower end of the company's product range.

So far this has been based on the DRS range of small 8-bit integrated workstations which have grown to 30% of the company's entire sales volume.

According to Sharpe, ICL has sold or has orders for 25,000 DRS machines with sales growing at 50% a year.

This focus by management on the lower end has led to widespread speculation that the company will bypass the 16-bit development to its workstation and go direct to the Motorola 68020 32-bit processor, due in production volumes around April next year.

Intel, current supplier to ICL for the processor in the DRS, is upset by the ICL decision.

This development in the DRS range is distinct from the Rair micro which ICL is selling at the rate of over 1,000 a month.

When ICL agreed to market and build the Rair device the company was hoping for larger sales, but the development of the DRS has overtaken the slow development of the Rair device.

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ST AUBYN... "Happy to make changes if necessary."

Telecom network is slow to open up

by Donald Kennett
LIBERALISATION of the British Telecom network is still bedevilled by the failure of equipment to get approval from the government approval board.

Only one item - a telephone - has so far been approved by the British Approvals Board for Telecommunications (BABT); other devices are going through the process of re-submission. Standards for PABXs and more complex exchange and data equipment are still not available.

The target for publication of the standards is slipping by, yet only two of the five parts have been issued for public consideration by

the British Standards Institute. Small companies' difficulties were highlighted last week when P&P Marketing of London announced it will be selling a portable telephone.

Leader Comment - page 9

ble telephone and data terminal combination as part of an agency agreement with British Telecom's Telecom Gold electronic mail service.

Although production started two weeks ago, and the company wants to put the device on the market next week, it has yet to be submitted to BABT. It is being

made by BCD Telecom of Tunbridge Wells, which developed the product with the aid of a "substantial grant" from the Department of Trade and Industry.

Alvar St Aubyn, engineering director of BCD Telecom, said the company had applied to have the product tested, but had not yet submitted it. St Aubyn said he had no experience with BABT.

"If we were a Plessey it would be easier. You know all the people there and you have a track record." He added that BCD Telecom would be happy to make changes if necessary to receive BABT approval.

Turn to back page

A long hot summer for system break-ins

by Howard Karten
HOT summers in the city usually bring down the incidence of US bank robberies. Computer break-ins, however, could become the new rage for August.

The US Federal Bureau of Investigation is looking into two possibly related break-ins. In the first a high school student gained access to a government nuclear weapons laboratory computer at Los Alamos, New Mexico (see full story, page 4). And last week, in an affidavit made public in a federal district court in Milwaukee, Wisconsin, the FBI revealed that it is investigating unauthorized access to the computer at New York's Sloan-Kettering Cancer Centre.

The Sloan-Kettering computer is attached to the Telenet network, a computer time-sharing system used by more than 1,000 companies throughout the US.

Although officials at the centre believe none of its records has been altered, there have been about 20 unauthorised attempts to use the computer.

Unauthorised access to the system was noticed when Sloan-Kettering records showed there were five new computer users not authorised to access the system. The intruders were apparently able to bypass the passwords.

The FBI has named Gerald R. Wondra of West Allis, Wisconsin, as a suspect in the case, though he has not been charged.

Sloan-Kettering is world renowned for its research into and treatment of cancer. A spokesman for the hospital said the intruders had nothing to gain by getting into the computer but "thrills".

Osborne relies on revival

by George Black
ADAM OSBORNE, British expatriate pioneer of the portable, has dismissed suggestions that his business is on the rocks.

He admitted that the Osborne 1 had not been well designed for mass manufacture and that demand for that machine was now small. But he insisted that the newer Executive model would be produced far more efficiently and he expected demand for it to pick up in the autumn.

He blamed his own ignorance for errors in production planning of the Osborne 1. Last week he was forced to shut down his New Jersey plant, laying off 100 people, concentrating output at the California factory where 430 are employed.

"It was taking 24-3 hours to make a machine with only a 50-

60% yield on the production line," said Osborne. "We had 300 people employed in manufacturing, which was far too many."

Customer service had also been conducted absurdly, he admitted. "We had 60 to 70 people just answering telephones on dealers' and users' inquiries. Our competitors just don't do such things. We must bite the bullet and quit doing that. You don't call Sony in Japan when your stereo turntable develops a fault."

The Executive would take about a third of the time of the model 1 to build, about one an hour, he claimed: and it would have a 90% production yield. The Osborne 1 would not be dropped completely, but would get only about one week in four of the production time in California.

"He did not anticipate having to

cut his labour force below its present level for the next six months.

Orders for computers generally had slumped during July and August but would revive in September, Osborne predicted.

He denied estimates that demand had slumped from a peak of 27,000 units a month to 2,000 a month now, claiming that both figures were exaggerations. But he declined to give the actual figures.

One Osborne official indicated that the highest output achieved would have been 8,000 to 9,000 a month.

In the US IBM had taken over the market, he said, so they would be bringing out an IBM-compatible machine which would be shipped "in volume" from November.

The California plant recently shed about 200 workers.

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DEC users get five-year package

by John Kavanagh
Just Digital Equipment this week promised DECsystem 10 and 11 mainframe users at least five years of development and support for existing products, despite a switch to an upgrade processor.

The company offered users a "transitioning role in bringing to market the TOPS operating system and the VMS system on the newer

by users, who were worried about the short-term future of their operations.

In a letter to users DEC said: "Just as DECsystem 10/20 customers have pioneered time-sharing and interactive systems, we now see them taking a leading role in Digital's Integrated Computing Environment."

"Customers will be able to continue to use all their existing software, while benefiting from our extensive development in net-

works, clusters, personal computers, Vax and communications."

The company added that work is in progress to improve processor performance.

Ian Service of York University, chairman of the DECsystem user group in Europe, said: "Five years is a long time in this business, so this statement will please users a lot, especially those worried about the short and medium term."

response to what we in the user group asked for."

Service added that DEC's plans would be the main talking point for DECsystem users at the European meeting of the Decus user association in Zurich next week.

DEC and its users have acted very quickly to clarify the future of the DECsystem range. The company announced at the end of May it was dropping its troubled upgrade processor project.

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Calma suspends a senior European manager

by Kevin Cahill
A SENIOR European manager at Calma has been suspended on full pay pending the outcome of an investigation.

Jim Carron, Calma's European vice-president, says that this matter is not connected with the investigation by the US Department of Commerce into allegations that Felix Popovitch, a former manager with Calma France, shipped unlicensed technology to the Soviet Union and the Eastern Bloc countries.

Sources inside the company say that the two incidents are connected, and that further action by Calma and its parent General Electric are expected. A spokesman at Calma headquarters in California said that the company was at no time aware of the alleged activities of Popovitch.

Felix Popovitch and three other French nationals were placed on the export privileges "denial list" by the US Department of Commerce several months ago, pending the outcome of an investigation into alleged shipments of technology to Communist countries.

Popovitch's presence on the list

only came to light when he applied for a job with another American company, Daif Systems.

Calma refused to rescind Popovitch's resignation and both Calma and parent General Electric claim that they were "totally unaware of Popovitch's alleged activities."

This statement is in line with the fact that for at least a month after his name appeared on the list, and while he was still employed by the company, Calma failed to take any action.

Sources in the US Commerce Dept say that legal action will take place soon. But action, other than

a denial of export privileges against Popovitch and the other Frenchmen named in the investigation will be much more difficult.

Either the US Department of Commerce will have to apply for extradition or face the problem of "extraterritoriality". Extraterritoriality is the term used to cover a country's attempt to apply its own laws outside its own territories.

£1million cash for British-US force

by Nuala Moran
BURROUGHS has given Fortronic, the Scottish-based banking and financial computer terminal manufacturer, £1 million to develop a terminal for the financial market.

The terminal, which is expected to be announced later this year, will be based on Fortronic's existing F65 terminal.

Part of the deal is an agreement for Burroughs to purchase 15,000 terminals, worth £20 million, from Fortronic in the next three years. According to the two companies this is not just a three-year agreement. There are plans to continue collaboration on a longer term.

Bob King, Burroughs' UK managing director, said: "We are teaming up to create a British-US force in the world financial terminal market. We intend to develop jointly new ranges of equipment and open up worldwide markets to large quantities of British-made financial systems."

"The relationship with Fortronic includes all steps from development to customer support."

Bob Archibald, Fortronic marketing director, said that the company had experienced problems with supporting sales outside the UK. "We decided we needed a relationship with a company that had the necessary contacts," he said.

From Fortronic's point of view this is the main reason for the tie up. Burroughs will put 5,000 people into selling the new terminals and will have a similar number providing administration and engineering support worldwide.



ARCHIBALD... "We needed a relationship with a company that had the necessary contacts."

Explaining the decision to form out the research and development in an area in which Burroughs has based its reputation, Clive Bartram, Burroughs' development manager for financial marketing, said: "The Fortronic terminal does everything we want it to do."

"It would take two to three years to develop this ourselves. Instead we have got something we could sell today."

But Bartram stressed that the Fortronic integrated terminal is not the answer to every problem. Burroughs took the route to modular terminals in the late 1970s, he said, and there were still plenty of markets for this type of product.

Once production exceeds 500 units a month, Fortronic expects to take on 60 new staff. Other joint development and manufacturing projects in the pipeline with Burroughs will create at least 40 further jobs.

Fortronic has a new custom built factory near Dunfermline, leased from the Scottish Development Agency, where the terminals will be produced. The company had a £6.7 million turnover last year and currently has 300 employees.

Texas turns to artificial intelligence market

by Philip Hunter
TEXAS Instruments has set about reviving its flagging fortunes by moving into the artificial intelligence market. The company last week announced that it had bought a 25% stake in Lisp Machines Inc (LMI), the US maker of computers dedicated to AI applications.

LMI has also started marketing a new super micro in the US aimed at the AI market. The machine is based on the NuBus technology, which allows a number of processors of different makes to be combined on a single board. The product, called Nu Machine, is not a complete computer, but a raw machine that can be adapted for different applications by adding processors.

LMI has added a processor board to make the machine into a computer dedicated to running the AI language Lisp, which is widely used in the US.

The main UK competitor for the machine - when it is announced - is made by Symbolics and marketed in the UK by Electronics Associates.

LMI's machine will be cheaper, but slower, than the Symbolics rival. But it is expected to have the advantage of being able to combine different applications because of the NuBus technology.

War Games password used in boy's computer break-in

by Howard Karten
THE Federal Bureau of Investigation, FBI, is investigating an alleged computer break-in by a Milwaukee high school student to a Los Alamos, New Mexico, national laboratory.

The student, Neal Patrick, is described by his lawyer as a bright, high school "hacker", who learned about computers on a six-week course last year.

An FBI spokesman in Milwaukee explained that the bureau was not releasing any details of the case, owing to the still preliminary nature of the investigation and the youth's status of minor.

Details of the case that have so far leaked out indicate that Patrick was apparently one of a group of students and "hackers" who call themselves Joshua. Joshua was the key password needed to access a

Norad defence computer in the new film, *War Games*.

The group is believed to have been responsible for multiple computer break-ins throughout the country in the past 10 months.

In this case, Patrick apparently accessed the Los Alamos computer through the Telenet packet-switched network. Telenet is a nationwide public-access network, to which a wide variety of commercial, academic, and research computers are connected.

Patrick and the others involved - some of them over 21 - were apparently caught through FBI intercepts.

Patrick's lawyer, Paul Piaszkowski, has negotiated legal immunity for his client. The others involved potentially face criminal charges of wire fraud, a federal

crime involving theft of services or goods perpetrated via interstate communications.

Telenet, a subsidiary of US corporation GTE, published a list of the publicly-accessible computers attached to the network, along with their network addresses or access codes.

This list is intended for legitimate subscribers to those computers, although in practical terms it is available to almost anyone. Computer Weekly was unable to determine if this list included the Los Alamos computer.

However, by simply trying various network addresses in sequence, it is possible to learn of computers out of that list. One computer bulletin board at least includes a voluminous listing of Telenet network addresses.



COOPER... Baker Street shop is a laboratory.

US group opens first of 75 stores

by Philip Hunter
A US franchising group is setting up in the UK to sell microcomputer packages to the business community. The group, trading in the UK as Programs Unlimited, last week opened its first shop at a prestigious site in London's Baker Street.

Another big US franchise group operating in the UK is Computertrend. It has 440 shops worldwide, mostly in the US, but only two so far in the UK.

Fred Zeona, operations chief for the US parent of the new UK outfit, said Programs Unlimited would focus more on the business, and would offer a complete service with software, consultancy and training.

Programs Unlimited is part of a New York-based group which has 600 hairdressing franchisees in the US. In the next two years it plans to open 100 shops to sell computers in the UK and 75 in the US.

The Baker Street shop would stay in the company's ownership and be a laboratory to test new hardware and software before releasing it, said UK managing director Jeffrey Cooper.

RAF places order for 22 minis

US MINI maker Perkin-Elmer has scooped an order for 22 super-mini computers for the RAF. The machines will be used in the F2 Mission Simulator programme to develop simulation and air crew training aids for the Tornado aircraft.

Perkin-Elmer will supply the machines to the major contractor, Sloger. It will also supply hardware extension to the programs normally written in the level languages to be implemented in machine code for greater speed.

Cementing deal

KENT Process Control has won a £100,000 contract from a government-funded cement kiln owner for a process control system. The idea is to optimise the quality of the cement produced by the kiln in Derbyshire, and reduce energy.

Import Dialog

A VIEWDATA system designed for communication between dealers has been installed by a vehicle importer VAG UK. The system called Dialog was supplied by Comdata Communications, and uses 550 terminals to connect 380 Audi Volkswagen dealers in the UK with VAG headquarters in Milton Keynes.

Finding the cure

FAMAR, the computer service for farmers based in Cheltenham, has won its first export order - two two Belgian homocystoprotectors. The order, worth £50,000, covers a complete database of patients and cures.

Ships sale

LONDON systems house Turnkey & Applied Computer Systems has collected a £100,000 contract from the ferry company Finanglia Ferries, for the supply of the Ships accounting package. Software supplied includes packages for import, export and booking, and implementation will be on a DEC PDP 11.

Cemetery buy

AN Australian catholic cemetery has come to the UK for a new control package for use in controlling valuable plots. Computer Software International, the Surrey-based microsoftware house, picked up this unusual contract from Sydney Catholic Cemetery.

Oil for Chips

ABERDEEN micro computer Granite Chips has notched another contract from the New Sea oil industry, with an order from Total for micros and control software. The company will supply the UK-made Comart Control micro, with access to the VisiOn project planning software installed on a Prime minicomputer.

Phoenix update

PHOENIX Assurance of Britain has replaced its photocopied equipment with the Modular Copier position System from Gestetner. The system is mainly in revising and updating working leaflets such as contracts, forms and premium guides. The system comes in a modular format, allowing the buyer to tailor it to his needs more than was possible with first generation 'compo' systems.

Orion puts software for IBM on market

by Nuala Moran
NEW communications software for IBM Systems 34, 36 and 38 is being launched by Orion Software of West Yorkshire. Called Network Orion, it will be available next month to UK and European users.

Network Orion is designed to speed a single site user with one system 34 or a multinational with hundreds of "Xs" around the world. It can interconnect 34, 36 and 38 so companies can have the appropriate capacity machine at each location.

Orion allows 3X to communication with other carriers, such as Telex, or other hardware, such as word processors and remote data terminals. It made no difference to the user what kind of machine at the location was being addressed, said Wilton Rooks, chairman of Orion's US subsidiary. This gave a company great flexibility in the way it managed its hardware, he said.

The communications network is a rewrite of a system which Orion launched two years ago. Rooks explained that over the past couple of years the company had built up experience of the market and found that a new approach was necessary to meet user requirements.

"That's why we went for a modular structure," he said. "This means that Network Orion works for a single site 34 user but it also works for a multinational with lots of sites."

"We have in fact placed more emphasis on single site users and on intercommunications to other carriers."

Using Orion, various methods of communication and types of traffic can be combined. It has facilities for remote data processing, electronic mail and text transmission. Users can also combine text or data files with electronic mail for transmission to any remote system.

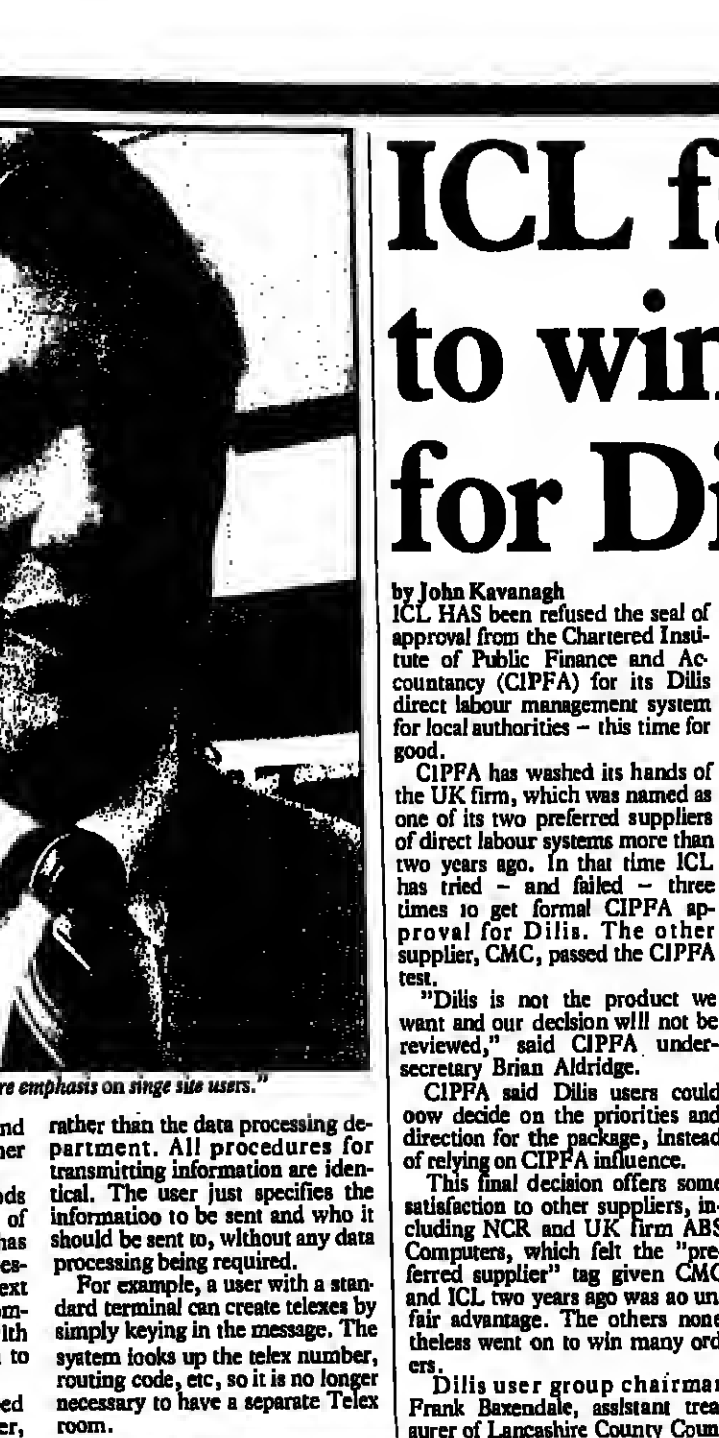
The network was developed from the point of view of the user,



ROOKS... "We have placed more emphasis on single site users."

rather than the data processing department. All procedures for transmitting information are identical. The user just specifies the information to be sent and who it should be sent to, without any data processing being required.

For example, a user with a standard terminal can create telexes by simply keying in the message. The system looks up the telex number, routing code, etc, so it is no longer necessary to have a separate Telex room.



THOMAS... "The user group decided some time ago that ICL's priority should be to satisfy customers' needs and that meeting CIPFA's requirements was a secondary factor."

ICL fails to win seal for Dilis

by John Kavanagh
ICL HAS been refused the seal of approval from the Chartered Institute of Public Finance and Accountancy (CIPFA) for its Dilis direct labour management system for local authorities - this time for good.

CIPFA has washed its hands of the UK firm, which was named as one of its two preferred suppliers of direct labour systems more than two years ago. In that time ICL has tried - and failed - three times to get formal CIPFA approval for Dilis. The other supplier, CMC, passed the CIPFA test.

"Dilis is not the product we want and our decision will not be reviewed," said CIPFA under-secretary Brian Aldridge.

CIPFA said Dilis users could now decide on the priorities and direction for the package, instead of relying on CIPFA influence.

This final decision offers some satisfaction to other suppliers, including NCR and UK firm ABS Computers, which felt the "preferred supplier" tag given CMC and ICL two years ago was an unfair advantage. The others nonetheless went on to win many orders.

Dilis user group chairman Frank Baxendale, assistant treasurer of Lancashire County Council, said most of the 100 users were now generally satisfied with the system. ICL's failure to win CIPFA approval was sad, but this did not mean there was still widespread dissatisfaction, he said.

The CIPFA specification had been very rigid, said Baxendale. "What is needed now is really tuning and some broadening of the system."

Douglas Thomas, deputy treasurer at Carlisle City Council, said the user group had put a lot of pressure on ICL and problems were now getting priority treatment. "It's going much better and in the end it will do what we want," he said.

ICL said: "The user group decided some time ago that ICL's priority should be to satisfy customers' needs and that meeting CIPFA's requirements was a secondary factor."

ICL's package for handling new housing benefits legislation is making slow progress, according to users, but the company said it was winning contracts from other suppliers. Guildford City Council said it had taken on an ICL specialist for seven weeks to sort out its problems.

ICL said: "We admit there are still problems, but we are working with local authorities to get implementation going."

Systime sets up robotics company

by John Riley
SYSTIME's plan to set up an independent robotic systems company, announced last week, marks one of the earliest spin-offs of a government-aided project to develop an unmanned flexible manufacturing system.

The project, called Scamp (Six-hundred Computer Aided Manufacturing Programme), was completed last November, when an automatic factory, using a computer control system developed by Systime and Faugue robots, was opened to manufacture machine tool components.

The five-year, £3 million project, which received an estimated £1 million from the Department of Industry, was set up by the 600 Group Company, the holding company for over 30 major machine tool and engineering manufacturers.

As well as setting up a robotics company, Systime also announced that it is setting up software franchises for its vertical software packages, and that it is encouraging some of its staff to set up satellite companies with franchises to help sell and support packages.

Systime's new robotics company is in the planning stages and, according to marketing services manager Clive Hay-Smith, is still in the "discussion period". The company has its own Special Systems Group, which it wants to expand by reorganising its pure research and development functions.

Systime's plan to set up an independent robotic systems company, announced last week, marks one of the earliest spin-offs of a government-aided project to develop an unmanned flexible manufacturing system.

Share issue by Intelligence to fund Seiko range in UK

Intelligence software house Intelligence (UK) is seeking £1 million from a share issue to fund its plans to distribute the Seiko range of micros. It will set up a new subsidiary, Intelligence Distribution, to handle the Japanese-built 16-bit machines.

Intelligence was appointed by Japanese trading conglomerate Marubeni as UK distributor for the Seiko kit last month, and has already appointed Colin Turney as managing director of the planned distribution subsidiary. Marubeni holds European distribution rights for the hardware from the Japanese manufacturer Seikosha.

"One technical evaluation of the Seiko 8600 has convinced us it will be a highly successful machine in the UK market," said Intelligence managing director Ashley Ward. "We will be offering it with the complete range of Intelligence software, plus software from other leading vendors."

In the software offerings it will not be going for "feature" packages, claims Ward. "We want real standard off-the-shelf stuff, though we are making strenuous efforts to make sure that the software - particularly the accounting packages - is true multi-user software."

The Seiko 8600, an 8086-based machine supporting various popular operating systems including CP/M-86 and MS-DOS, made its first appearance in Europe in April. Wrangling between rival "exclusive" distributors for the UK at the time cast a shadow over the machine's UK announcement. Both Marubeni and US-based Sci-



WARD... "We want real standard off-the-shelf stuff."

Com announced their intention to market the Seiko 8600 in the UK. Sci-Com through Synchronised Computers, a UK company specially set up with Sci-Com's support for that purpose.

Although Intelligence kept a low profile throughout this period of wrangling, it was always there as Marubeni's UK distributor, according to Ward.

Now Synchronised Computers has left the distribution scene, and founder John Clarke has turned his attention to handling SMC's software in Europe.

Intelligence plans to raise the money for the distribution subsidiary through the issue of further share capital. It intends to set up a



BROWN... Signs with Canon.

network of 100 dealers for the 8600 range. Dealers are being recruited now ready for the planned public launch of the machines in mid-September.

The 129,000 new shares will be placed with CIN Industrial Investments, a new investor that will take 50% of the issue, and existing shareholders Murray Technology Investments - subject to the approval of shareholders at an extraordinary general meeting held this week.

The issue will bring the number of Intelligence shares to 690,000. Murray Technology will maintain its 15% holding in the company, and Ward will remain the largest shareholder.

LAN firm signs £1m agreement with Canon

by Caroline Burgess

A MAJOR contract with NEC, a £1 million agreement with Canon and a move to larger premises are all aiding a small British company, Quorum, in its aim to become a leading designer of local area networks.

Originally set up in 1979 under the name QI Europe by the British Technology Group with £250,000 of government investment, Quorum was formed last month by a management buy-out.

Quorum develops, manufactures and markets multi-user microcomputer systems based on its own networking system, QuorumNet. A daisy-chain network of workstations connected by coaxial cable QuorumNet has a mass storage unit of 85 megabytes, which will support up to 64 simultaneous CP/M users.

Under Quorum's agreement with NEC, QuorumNet will be used with the NEC PC8000 personal computer. "If you could be



BROWN... Signs with Canon.

seen to sell to the Japanese then you take a significant step forward in terms of credibility," said Alan Brown, Quorum managing director.

Quorum's contract with Canon will make QuorumNet available with Canon's 16-bit microcomputer AS-100 from this autumn. The AS-100 was introduced in the UK earlier this year.

Ray White, product manager for Canon's small business computer division, said: "The availability of local area networking capabilities in microcomputers will make comprehensive data handling and information processing systems accessible to most businesses."

Quorum announced this month that it had moved to larger premises in Southampton.

Micro News is compiled by Robert Parry

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Sperry for hi-fi

LASKY's, the high street hi-fi supplier, has opted for Sperry's dual System 80 machine for further automation of accounting and administration. The equipment will be installed next month and will include two Model 80s, each with two Mbytes of memory and 1,200 Mbytes of disc storage.

Manufacturers shun the 16-bit marathon

by Caroline Burgess
THE London Computer Marathon ended last week with the record for the fastest time to complete the 16-bit marathon. IBM did not enter but a personal computer was put in by dealer Sparx Micro.

The machines ran the reliability test non-stop 24 hours a day for seven days - except for a half-hour delay at the start due to a power failure.

What emerged from the marathon was a wide difference in the speeds of the machines entered.

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The boss who tired of the corporate lifestyle...

FORMER IBM vice-president Dick Williams' appointment to Prime as its European boss is more than a typical high flyer's mid-career move. It is refreshingly unique - for he took four years off from the computer industry between the two jobs.

After 20 years in IBM, during which he became vice-president of European operations, General Business Group, Williams left the company to go into real estate development in Florida.

"I was tired of the corporate lifestyle, wanted more time with my family, and more time to think," he explains.

Although successful in his semi-retirement in Florida, he began to find small business parochial: "It's

by John Riley

hard to walk away from the international environment and there is an excitement about the computer industry," he says.

"I had always found it difficult to believe that I could be happy in any company other than IBM, and if I had been approached two years ago I wouldn't have moved," he says.

The offer from Prime earlier this year to become its vice-president Europe, Middle East and Africa marketing operations was the right job and came at precisely the right time, he explained.

The four years away gave Williams a clear perspective on the industry. "I can focus on the industry better than when I left," he says. "I don't know if it was a

question of cleaning out the cobwebs or just that I feel more comfortable in a smaller company."

After graduating from Michigan State University in Business Studies and Economics, Williams joined IBM back in the electromechanical age. He then worked in systems analysis and procurement with one of the earliest computers, the IBM 650, and helped to develop one of the early integrated manufacturing control systems based on the IBM 1400 system.

Looking back on the progress of the industry since then, he identifies two major revolutions, in both of which he was involved. These were, firstly, the change from batch to real time with the recognition of the inherent need for communications; and secondly, distributed data processing.

Williams started to pick up the need to "drive intelligence down-line" from customers in the banking industry during a spell in Paris. "We recognised that thoughtful customers were asking for things they needed and were no longer content to take just what was available."

After a posting to the US he found himself back in Europe as general manager SE Europe bringing DDP to the finance industry. "Implementing decisions I had strategically dictated."

Over the four years Williams has been out of it, he does not believe that the computer industry has changed dramatically. "The observed evolution of industry trends apparent four years ago are still

apparent."

As an observer on the outside he was struck by the "tremendous impact that the industry has indirectly on the younger generation."

Looking into the future, he thinks the most significant trend will be a de-emphasis of hardware. "Successful suppliers will move further away from the emphasis on hardware and will become integrators providing systems solutions. And customers will develop the capability to become innovative."

Williams welcomes the challenge of working with a smaller company. "I can have my arms round the problems in Prime," he says, "and am better able to be my own strategist and implementer as



WILLIAMS... "An excitement about the computer industry."

opposed to having these as separate mind frames in IBM."

When asked how he regards IBM now that he is competing with it, he replied that he maintains a "tremendous respect" for IBM.

Growth and its management is a subject that concerns Williams. Several companies are experiencing some slowing of relative growth and he believes that change "requires change in the way companies manage."

And how does he find living in the UK? He enjoys it and finds that his hobbies, golf and fishing are both "acceptable here - although you can't fish where you want."

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Women get Wise to Wages issue

1984 is to be the year of the high tech woman. A campaign will be aimed at sweeping away the cultural and social barriers that keep women out of the plumb jobs in computing, science and engineering.

At a stroke the shortage of specialists can be cured, or so we are told.

We at *Computer Weekly* were a little puzzled to see that the name of the campaign had been changed from Wages to Wise. Now, Wages stands for Women And Girls into Engineering and Science, while

Wise is an acronym for Women Into Science and Engineering.

Is the campaign no longer aimed at girls? Or was the name changed because women, in this enlightened feminist age, do not like being called girls anymore?

Feeling an itch to know, I phoned Wise. A young woman there was happy to tell us that girls are still very much alive in the campaign, and that the name change was made because Wages makes people think of money.

Wise is for wiser than that.

Getting to the bottom of it

DIGITAL EQUIPMENT is faced with a deep-seated dilemma. The company - or to be more exact one of its OEMs - has sold the Ford Motor company a computer system to assess the comfort of seats in a range of commercial vehicles. A PDP-11 mini will calculate the seat curvature, seat suspension and vehicle suspension most conducive to a smooth ride.

Data will be gathered from devices placed in a specially designed seat called a Sit-Bar, an acronym for the memorable name Seat Interface for Transducers indicating Body Acceleration Received.

Sit-Bar has a flat upper surface on which the test driver sits.

But the secret lies in the lower part, which is modelled to represent the shape of an average pair of human buttocks when seated.

Here I believe lies the weakness of the whole scheme. Accurate measurements are being taken and analysed, but the whole exercise could be doomed to failure because there is no such thing as an average pair of human buttocks.

The perfect seat for Cyril Smith would not fit Twiggy, for example.

In reverse order

FOLLOWING *Computer Weekly's* astounding revelation that Sorcim - the Californian software house which gave the world the Supersoft program - is actually Micros spelt backwards, we announce our latest world-shattering competition for similarly reversed names within our industry.

The more significant they seem the better we shall like them - SOMNI, for instance, gives a flavour, perhaps, of the aura of Inmos. Failing that topical anagrams will be welcomed.

See what you can come up with.

Lean times

IBM housewives in South-west Germany have become a nuisance to the local community of butchers.

The Germans are fond of their food, in particular their pork and the fat of their meat. And many sport pot-bellies to prove it.

But the IBM women have been causing trouble by demanding lean meat. Their husbands, they claim, have a slim, trim corporate image to maintain.

I wonder if the quality of their corporate lunches may not have more to do with it.



Coming to terms

ASKED only the other day to furnish yet another definitive definition of some obscure computing term - "DP Manager", I think it was - it occurred to me that there in computerland have been without the inestimable benefit of my deliberations on matters linguistic for some little time.

Here then are four pearls of wisdom:

If it's there and you can see it it's REAL.

If it's there and you can't see it it's TRANSPARENT.

If it's not there and you can see it it's VIRTUAL.

If it's not there and you can't see it it's GONE.

Root of the matter

THOSE who visit Scotland next summer may be surprised by the number of Scots to be found there. Reliable estimates suggest twice the usual number in the Glasgow area.

The reason for this expected influx is that a computer is being set up to help trace their ancestral roots. The service will be available at the Roots Centre, a museum being established in Glasgow.

It is aimed particularly at emigrant Scots who want to come home and find the true colours of their tartan.

By next summer data will be available on 15,000 Scottish surnames, as well as related information on tartans, clans and the folklore.

The Scottish Development Agency is circulating publicity on the new database in the US, where about 50 million people can trace Scotsmen, perched somewhere in the family tree.

The Roots Centre could be a busy time.

Mark my words

IN view of the mounting hysteria about the proliferation of trademarks in every piece of computer documentation we read, enough is enough.

We are considering making a trademark a trademark to stop all the trademarks blocking up all the space where the small print used to go.

Computer Weekly

Quadrant House, The Quadrant, Sutton, Surrey SM2 5AS

Thursday, August 25, 1983

A network tied up in red tape

A SIMPLE red adhesive sticker appears to be the main stumbling block on the road to liberalising the British Telecommunications network.

The red sticker is required for all devices which are capable of being attached to the public telephone network. It is a sign that the equipment has been tested, evaluated and approved by the British Approvals Board for Telecommunications: without the approval, suppliers are liable to be prosecuted by any member of the public or by the Department of Trade and Industry.

Two years after the formation of the BABT only one device, a telephone, has received its approval. The board was set up in 1981 when the government published its Bill to separate British Telecom from the Post Office and announced its intention to limit Telecom's monopoly.

The Secretary for Industry was given the power to approve or disapprove equipment for attachment to the telephone network and also to licence added value services and the resale of transmission capacity. The BABT, an independent body acting in conjunction with British Telecom, was to co-ordinate the approval process.

At the time the Board was seen as a device to speed approval for equipment and avoid any possibility that Telecom would use the approval process to maintain its monopoly contrary to the intention of the government.

In November 1981 it was announced that telephones and discrete modems could be submitted for approval, with other types of network attachments being accepted from the following July. A full set of standards for all attachments to the network was promised for July of this year.

The cold facts are that still only one telephone has successfully completed the approval process and that standards for PBXs and more complex exchange and data equipment have yet to appear.

The problem is that few of the companies which were expected to be queuing for approval seem to understand the system, and the BABT itself seems to be excruciatingly slow.

Last week a small UK company launched a portable mail and telex terminal on the market in hopes of taking advantage of the new liberalisation policy. The irony is that although the product was developed with "substantial" Department of Trade and Industry backing, and is to be distributed in conjunction with Telecom Gold, British Telecom's electronic mail service, the product does not have BABT approval.

BCD Telemail, a small Tunbridge Wells company which developed the terminal, says it has applied to have it tested but not actually submitted the device for testing. The company believes that the BABT actually has to ask BCD to send the terminal in for testing.

BABT says that BCD is on its list of enquirers, but no application for approval has been submitted. If the device had been submitted, its chances of rapid approval seem slim. According to the BABT, a very small proportion of the equipment submitted to it complies with the standards (only one telephone to date); but a number of devices are being re-submitted after making required modifications - a process that can only lengthen the approval process.

P&P Marketing in London is the UK distributor of the BCD Telemail terminal. P&P has an agreement with Telecom Gold. It would seem logical that BT might have given some pointers as to how the companies should go about obtaining BABT approval.

Not so. Telecom Gold says that getting approval is a matter between the companies and the approval board. It deliberately doesn't want to get involved in the approval process for fear that it would be seen to be interfering.

DoT departments have to fall over backwards to be seen to be independent. There is even separate funding for the approvals board. British Telecom takes a similar view, which it says it always made clear to P&P.

P&P says it understands that merely applying for approval is an acceptable way of bringing the product on to market. The company also points to its close relation to DoT and British Telecom. The company doesn't envisage any problems.

It may not have any problems, but there does seem to be a clear message to the government and the BABT. Telecommunications is to be one of the country's major growth industries. How about getting your act together as far as the telecommunications side goes?

Too many people seem to be working in the dark.

1984 and all that...

THIS week's example of the strange things people say about computers was sent in by G. W. Hart of Orpington, Kent, who writes:

A traveller wanting to avoid the sun on a circuitous Inter-City train from King's Cross to Newark asked to reserve a seat on the left-hand side of the carriage. "Ah no, sir," he was told. "Smoker or no smoker, facing the engine or back to it, but the computer cannot tell its left from its right."

Private firms must be coaxed by 100% funding

NUALA MORAN reported Sir Clive Sinclair as saying "We need a national sense of humour?" to hammer out a massive silicon foundry among these people" (*Computer Weekly*, August 4). Earlier, he said this "If we don't make chips we've had it. I think I'll emigrate."

Sinclair reported in similar vein to both the Alvey Committee and to the House of Lords Select Committee on Science and Technology: "As the computers of the future move away from the Von Neumann architecture towards increasingly parallel modes of operation I foresee the need to imbed processing capability in memory, and only a computerable ability to produce (their own) CMOS chips with 10⁶ or 10⁷ devices in large

numbers and at high yields will remain competitive."

Sir Clive is on the crest of a wave of success, and yet he talks of emigrating. I think he is right to do so. I predict that the government decision makers will ignore Sinclair and take advice from those very people in GEC, Ferranti and Plessey who presided over the disintegration of our semiconductor industry.

When I worked in Motorola (Phoenix, Arizona) in the 1960s developing the most advanced integrated circuits in the world, no one dared to talk of the government reducing their funding of our work below 100%. No one will do this work for 50% or 33% support, and no one ever has. Companies like GEC, the big dying dinosaurs,

may take a 50% government-funded project and then boost internally how their clever accountancy has boosted the real support up to 100% and above support by government.

The companies of the future, the ones with a chance of producing something useful rather than merely burning up the government support, do not have squads of accountants to increase an apparent 33% or 50% government subsidy up to 100% and beyond; they do not think on those lines.

If, as seems likely, the government pulls back to support at low levels like 50%, then their funding will merely be the latest slash fund to keep the old, dying, lazy monsters alive for another decade. Nothing positive will come of it.

It is time people began to realise that, in the US as well as here, private industry is so hostile to the idea of developing its new, future products that they need at least 100% funding support to be coaxed into doing it. Otherwise they would prefer to die.

I have worked on dozens of products in microelectronics and in computer hardware, in Britain and the US, and for the last 20 years I have come across virtually no case of major new product development in high technology which did not carry far more than 50% government funding.

The government gets most of the profits back in taxes. Why does it refuse to put in money up front?

IVOR CATT
St Albans.

Neil Kinnock's figures

IN your wide-ranging article Kinnock lashes education strategy (*Computer Weekly*, August 4), you quote several figures attributed to Neil Kinnock.

Without wishing in any way to lessen the urgency for tackling computer training, I question the scale of the shortfall of trained staff and the output of trainees given: "... demand for 30,000 skilled workers, but trainees were only being output at the rate of 1,500 a year."

No two estimates of shortfall agree but about 15-17,000 would seem to be more realistic.

Polytechnics and universities will produce about 5,000 academically qualified computing personnel this year, and the Computing Services Industry Council (Cosit) is granting 400 trainees in employment. In addition, there are some 4,000 TSPs computing trainees plus 250 sandwich course

students grant aided by the MSC. However, in computing, as there are no widely accepted qualifications or certificates of competence, the real test of employment is the ability to do a job and that of course pre-supposes a person has been employed and trained.

The national need is to make all employers of computing staff aware of the importance of recruitment and training, and that they have a responsibility to take on and train staff.

Currently too few employers are prepared to make this crucial investment because of the fear that, having spent time and money training competent staff, they will be "poached" by other companies which only recruit "experienced" personnel.

GORDON EWAN
Director
Cost
London WCI.

Trying to get a start

I READ with great interest your recent articles on education and training.

For some time now I have been trying to get a start as a trainee programmer, after successfully completing a Tops programming course. So it was somewhat demoralising to read that the computer industry is short of some 40,000 programmers and analysts.

I have written about 150 letters of application, and from my point of view there seems little evidence that the industry is doing anything significant to alleviate its "biggest problem."

Many people would agree that the best form of training is done on the job, where individuals become familiar with the actual systems on which they will be working. So why don't firms, which must have the foresight to see their own potential expansion, train staff to fill the positions that they will have

considerable difficulty filling if they choose to get a programmer "off-the-shelf", given that the shelf is empty.

I hope I find something soon before I despair of starting in an industry supposedly so short of staff.

A. A. WILLIAMS
London N22.

Closed door

AS an ex-Tops course Cobol student, I would be interested to know what outlets there are for mature trainee programmers anxious to get a foot on the rung.

I have been working in data control/computer operations for the last two years, and very much want a future in programming. It seems to be a closed door.

Can any readers suggest how I might achieve my ambition?

PATRICIA HARRISON
Wimbledon.

Piping information software into the home via the TV set

JUST as the forces of technology moved us toward centralisation and mass production in the first half of this century, new technological developments in communications will free us to use our productive energies on a more decentralised basis.

Evidence of the shift towards decentralisation already can be seen in new forms of television programming. The emphasis on mass appeal is diminishing.

Concurrently, there is demand for immediate access to information services. As our society moves away from centralisation, the importance of delivering information to the home increases significantly. Satellite Television Corp is at the forefront of the technological progressions that are enabling these societal changes and is developing a new television system that will allow the company to respond quickly and efficiently to evolving trends in entertainment and information services.

Until the mid-1970s, American consumers had limited viewing options. Programmes and scheduling conformity were commonplace. With the advent of satellite-delivered cable television programming in 1975, a whirlwind of change swept across the country. Instead of the same conven-

sion sets.

As the age of information progresses, the constraints of time and place are loosening their grip on the American consumer. For decades, the typical American has been bound to a way of life in which the watch and the automobile reign supreme. A dependence on mass production made it necessary for people to gather together in one place at the

This Platform is extracted by *Computer Weekly* from comments written by Richard S. Bodman, president, Satellite Television Corp, a wholly-owned subsidiary of Comsat.

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The response of the television viewing public has been overwhelmingly positive. With the delivery of programming diversity to the homes, consumers expect more than ever before from their televi-

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With advances in telecommunications, the system can be decentralised by establishing home communication centres.

With Direct Broadcast Satellite, information software can be piped conveniently and cost-effectively into the home. By linking the television to a home computer, complete with word processing capability, the home will have an advanced electronic system comparable to a modern office.

Through these innovations, a system will evolve by which individuals can develop and use their talents whenever and wherever they wish.

Liveware File

by Don



Mark my words

IN view of the mounting hysteria about the proliferation of trademarks in every piece of computer documentation we read, enough is enough.

We are considering making a trademark a trademark to stop all the trademarks blocking up all the space where the small print used to go.

Two dates to remember

The importance of software in the computer market place, as the past is a computer package that actually brings the system alive and makes the customer's applications has never been greater - that's why you should make a diary date now not to miss two very important events:

NOV 15-18 '83
Software Village
at
COMPEC '83

1: First is the Software Village at Compec '83 which is greatly expanded on previous years and will be an integral part of the Show in the West Hall of the Grand Hall, Olympia, London, November 15 - 18 1983.

JUNE 5-7 '84
software '84

2: The second is the recently announced new Software '84 exhibition and conference. A show devoted entirely to the subject of business and professional software at Earl's Court, London, June 5 - 7 1984.

Both shows are organised by Reed Exhibitions, the country's largest business exhibition organisers, and sponsored by *Computer Weekly* and *Software* in association with Systems International, Practical Computing, Micro Business and Computer Talk.

For more information contact the Exhibition Manager Compec '83 or Software '84 Reed Exhibitions, Surrey House, 1, Throby Way, Sutton, Surrey SM1 4QQ. Telephone 01-443-8040.

Wallingford OX10 8NN

BCS in bid to convert trainees into specialists

CONVERTING the abundance of enthusiastic apprentices into experts in fields like real time programming is a major problem in the computer industry. But at last it looks like something may be done.

The British Computer Society is ready to move ahead with its Professional Development Scheme which it hopes will tackle the imbalance between trainees and specialists.

The scheme was set up to develop a national training policy for people who already have degrees, or some experience. The BCS Council has voted approval - and cash - for detailed plans to be prepared.

The BCS' Tom Umpleby, a member of the working party for the scheme, said there would be three parts to the training: general education, more specific training in individual skills like real time programming, and job experience.

The training could take place during the early years of a career and should blend with the present BCS examinations.

The BCS has just completed a survey to find what people think of the strategy. Opinion was sought and obtained from just about everyone who is anyone in the industry. The list includes the National Computing Centre, the Computing Services Association, the Manpower Services Commission, the Departments of Industry and Environment, colleges, universities, local government, ICL, IBM and representatives of many smaller companies.

Umpleby describes the overall response as positive, and plenty to encourage the BCS to move ahead firmly with the final phase of the scheme.

The BCS must sell the scheme to several groups of people, says Umpleby. Individuals must be convinced that the certificate will

make them more valuable in employers.

Employers must have a similar conviction and also be willing to help with the scheme by releasing staff for training. And universities, polytechnics and organisations with training facilities will have to donate some of their man hours.

Much organisation and publicity will be needed to make the scheme a success. But Umpleby maintains that it is just an evolution and unification of the BCS' present schemes.

One of these is a model degree course for data processing, first published by the BCS in 1976 and revised since. "This has been influential in getting courses revised," says BCS education officer Kay Kehoe.

The idea was to develop a degree course concentrating more on commercial data processing needs than does the conventional computer science course. Several organi-

sations have taken up the idea, including Huddersfield Polytechnic, Bristol Poly, Brunel University and Leeds University.

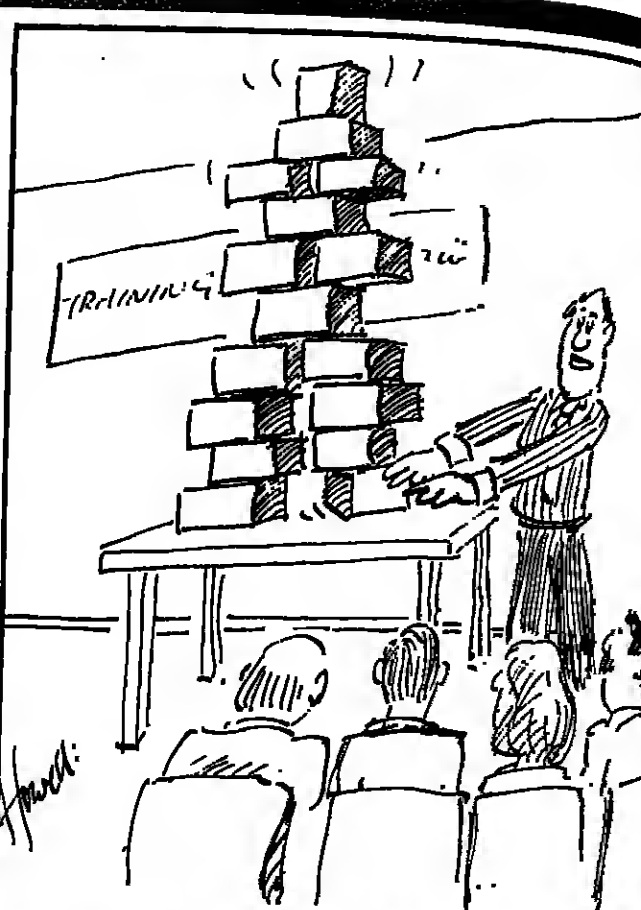
According to Kehoe, these courses are not an exact match of the BCS specification, but are close enough to merit approval; they also give partial or complete exemption from BCS exams.

In systems analysis training, the National Computing Centre is very active. One of the centre's first moves was to collect a group of companies and start a six-week course, with the blessing and support of the BCS.

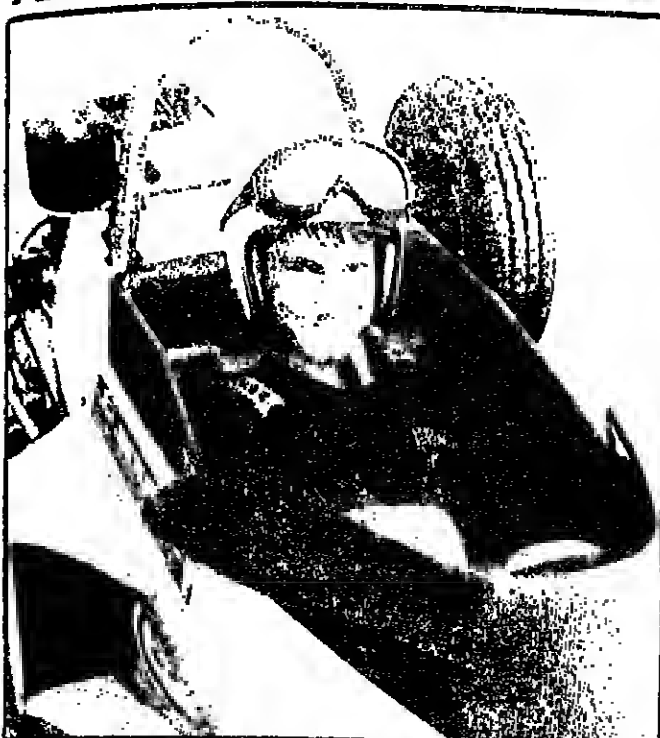
The centre and BCS have just agreed a new syllabus for the course, taking account of design methods like Yourdon and Jackson Structured Programming.

The course is not for beginners, but for computer science graduates or programmers who after a year or two at the coding bench, want to move into systems analysis.

"The Block Structure Technique does have disadvantages - at least now demonstrate".



PEOPLE

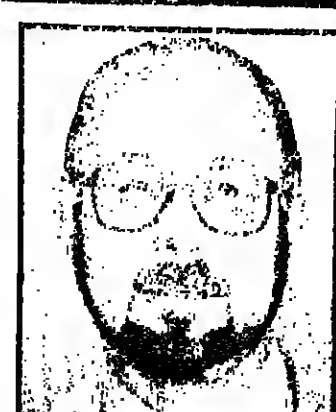


STEPPING into a single-seater racing car at Silverstone's Grand Prix Circuit was dream come true for Richard Gee, 21, from Broadstone, Dorset, a computer operator with Barclays International at Poole. He is one of 20 finalists in the Marlboro Challenge - the search for new British motor racing talent - who are training for the competition's final at Brands Hatch on September 13 and 14. Gee, an enthusiastic sportsman, has always had an interest in motor racing but had never been on a circuit before he accepted the Marlboro Challenge. He has two more days of training to complete on August 24 and September 3.

To head the newly-formed Information Services Division, National Provident Institution has appointed Brian Blake. As assistant general manager information services, he will be responsible for NPI's computer systems, computer operations, organisation and methods, and telephone, printing and typing services. Blake joined NPI in 1960 and in 1979 was appointed assistant divisional manager (administration).

Hawke Electronics, a franchised Digital Equipment distributor, announces personnel changes within its DEC division. Appointed divisional manager is Steve Kearns, formerly product manager for Hawke's Texas Instruments franchise. Prior to joining Hawke in 1982, Kearns was with Decade Computers. Colin Evans formerly product manager for the DEC franchise becomes UK sales manager. Malcolm Pallant, 37, continues as technical manager while Digby James, formerly with Crelton, becomes part of the sales and product support team.

Twenty-six-year-old Keith Holdstock has been appointed chief electronic engineer for SML, the microcomputing company formed to exploit the products of Bath University's R&D. He was co-designer of one of the products originating from the University.



Memory Computer (UK) announces the appointment of Roger Deards (above) as turnkey systems manager. He is responsible for the newly-formed Turnkey Systems Division, which markets Memory's range of commercial software on Prime computers. Deards has been with Memory for three years as software and programming manager for Memory Computer Services.

Paradyne, manufacturer of high speed modems and IBM network communications systems, has appointed David Houston director of product marketing, Europe. He became the company's first European employee in 1980. Previously, he was European product manager with a Paradyne distributor.

Molecular Computer European Operations has appointed Len Lambert as regional manager. He will cover all Western Europe other than Germany and Scandinavia, with Africa and the Middle East. He was formerly European business manager with Zynar, where he was responsible for running the German subsidiary and setting up distributors in other countries. Before that he was deputy managing director of Intercom Communications.

The Council of the British Electrical and Allied Manufacturers' Association (BEAMA) has appointed I. M. Cleare, managing director of Gifflex-Key, to the Standards Policy Committee, and Peter Dillstone, sales director of Arctelectric Switches, and Will Robinson, external relations manager, Ferranti Computer Systems, to the Publicity Advisory Committee.

Ian J. Orroek is named as managing director of Rascal-Redac. He will be responsible for all the international operations of the Rascal-Redac group of companies, which has made more than 1,100 computer-aided engineering installations worldwide. Orroek, 36, joins Rascal-Redac from United Telecommunications of the US. He was managing director of its UK and European operations following the acquisition by United Telecommunications of his own company, Computer Resources.

Fred Masearenhas (above) is named by Perkins-Elmer Data Systems as UK marketing manager with responsibility for the microcomputer company's marketing strategies throughout the UK. He joined the company in 1979.



PFS thrives on the threat of disasters.

Firm that thrives on disasters

SMALL firms wanting to buy their first computer have until recently found independent advice hard to come by. But as the industry matures, more trouble-shooting consultancies are offering this service in addition to their more lucrative work for established computer users.

One such firm is Project Facilities Services, a fast expanding outfit which has just opened new headquarters in Nottingham. PFS will appeal mainly to large mainframe users, but claims to be equally at home helping out a small firm confused by the seemingly endless array of identical-looking plastic boxes to choose from.

After all, as director Derek Wadham says, people can - and it is hoped will - come back for more involved studies after an initial consultation.

"We like to consider that we offer a complete consultancy and advisory service," says Wadham. This includes feasibility studies, as well as help with the decision on which computer to buy.

PFS also thrives on computer disasters, or more accurately the threat of them. The company has written disaster recovery procedures, and Wadham says he has been asked to give a presentation on disaster standby and security to the IBM Computer Users Association.

PFS will suggest what level of security is appropriate for a particular installation. The most expensive option is to have a second computer gathering dust in the cupboard ready to take over. The high cost of prolonged downtime might make this feasible for big banks, but a cheaper alternative is to use one of the mainframe recovery services such as Fallsafe.

Fallsafe offers clients guaranteed that on its IBM mainframe when their machine fails.

"One of the questions we ask is: Can it be done manually?" says Wadham. If the work can be done manually for a while, then so much the cheaper.

Wadham and his co-director Neil Dennis worked for ICL's software division (formerly Data-kill) before forming the new company.

PUZZLER

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GIVEN just one of the figures in this skeletal division-calculation, you are asked to reconstruct the complete sum. See page 39 for solution.

Workplace is compiled by Philip Hunter

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Three directors appointed to the board of Gresham Lion (PPL) are: Dudley Reeves (centre) managing director, who has been with the company for seven years and previously was divisional manager, John Stuart (right), sales director, formerly sales manager, and John Phillips (left) technical director, who has been with the company since its formation and was most recently technical manager.

DIARY

- AUGUST 30-SEPTEMBER 2**
The second International Conference on Database, organised by the British Computer Society and the Universities of Aberdeen and Cambridge, takes place at Churchill College, Cambridge. Details: Peter Hammarley, Middlesex Polytechnic, London N11 2NQ.
- AUGUST 31-SEPTEMBER 1**
Improving Programmer Productivity is a practical workshop for trainee programmers with basic language training and initial experience. Run by BIS Applied Systems, it is to be held at the Park Court Hotel, London, and costs £270. Details: Cherry Blomore, 01-261 9237.
- SEPTEMBER 1**
Are You Leaving Your Career to Chance? P. Hetquet, Electronic Recruitment Company, University Centre, Mill Lane, Cambridge. IEER.
- SEPTEMBER 5-8**
IBM Cobol Review, a course organised by Altergo Education, takes place in London. Aimed at inexperienced Cobol programmers, it costs £450. Details: Altergo Education, 01-836 9303.
- SEPTEMBER 5-30**
Data Training's systems analysis and design course takes place in Holborn, London. Fee is £1,150. Details: Philip Corker, 01-404 5444.
- SEPTEMBER 5-9**
Computer Training and Education Centre runs its 280/8080 Assembly course at its centre in Clerkenwell Road, London. Further information from Richard Lee, 01-251 4010.
- SEPTEMBER 6, 7**
BIS Applied Systems is running the course, Team Management Leadership, for newly appointed project or team leaders. It will be held at the BIS Training Centre, London SE1. Cost is £285. Details: Cherry Blomore, 01-267 9237.
- SEPTEMBER 7-9**
Implementing and Operating Local Area Networks is a seminar organised by Frost and Sullivan. It takes place at the Mount Royal Hotel, London, and costs £225. Details: Carolyn Budd, 01-486 0334.
- SEPTEMBER 12-16**
Programming in Pascal is a course run by Computer Training and Education Centre at its Clerkenwell Road, London, centre. Details: Richard Lee, 01-251 4010.
- SEPTEMBER 12-16**
Basic RPGII Programming is a course to be held by MSS Computer & Business Consultancy in Worthing. The consultancy is also running one- to five-day microcomputer and word processing courses at venues in London, Worthing and Sheffield, with fees of £125-£335 respectively. Details: Marcia Gay, Worthing 347556.
- SEPTEMBER 14, 21, 28, OCTOBER 5, 12, 19**
Computer-aided Circuit Design is a short, advanced pick-up course organised by Coventry Lanchester Polytechnic. Course fee is £60. Details from Carolyn Hall (0203) 24166.
- SEPTEMBER 15, 16**
Microcomputers in Banking is an international seminar to be held in Luxembourg. It is organised by Société des Poires Internationales de Luxembourg, Rue Alphonse, Weiser, 2721 Luxembourg-Kirchberg, BP 110, L2011 Luxembourg.
- Reducing Human Error in Computer-based Systems** is a Frost and Sullivan seminar at the Park Lane Hotel, London. Price is £385.
- SEPTEMBER 14, 15, 16**
Office Automation and Integrated Information Processing Support Systems is a Frost and Sullivan seminar taking place at the Hilton Hotel, Amsterdam. Cost is £425. Information from Carolyn Budd, 01-486 0334.

How Fantasia helped two in a hut grow rich and famous

SINCE the humble beginnings in 1938, Hewlett-Packard's expansion has continued steadily, always on the principle that it was financed from within, to make Hewlett-Packard the world's largest manufacturer of test and measurement instruments and a leading small computer manufacturer with plants in Europe and the Far East as well as the US.

While Packard, as chairman of the board, and Hewlett, as chairman of the executive committee of the company, still retain much influence they are now in semi-retirement. It is John Young as president and chief executive officer who has for five years been building the reins. After a slow transition, he has recently been pulling the computer side of the company away from its traditional trajectory.

A keynote of Hewlett-Packard's success, and paradoxically a cause of its headaches, has been its partition into 44 separate product divisions to maintain the entrepreneurial spirit and to allow the company to respond quickly and effectively to market changes.

That approach has worked well with the traditional side of Hewlett-Packard's business, electronic test and measurement products (which accounted for 37% of sales in 1982), medical electronic equipment (3%), and analytical instrumentation (4%), where the products are independent of each other and where competitors are often small businesses.

In addition, with the electronics products being independent of each other, the company has been primarily product oriented — that is, the engineers produce their products and then seek a market for them, rather than allow themselves to be driven by the market.

However, the company's move into computers in 1966 placed it in a different ball game, which it is only this year fully beginning to adapt to. The proliferation of independent divisions within the company and the emphasis on products over marketing led to problems in the 22 data processing divisions. Various divisions were making overlapping machines, and, far worse, they were, and some are still, incompatible.

Peripherals from one division were not always compatible with CPUs from another, the technical computers are not able to interact with the commercial computers, and inside the commercial sector, minicomputers such as the 3000 Series and the 250 Series cannot yet communicate with each other.

In addition, the inability to have 32-bit addressing on the MPE operating system 'aroused fears' that the highly successful 3000 Series was falling behind the full 32-bit superminis produced by rival companies. The company was also late into the personal business computer market.

Moreover, Hewlett-Packard has had a mixture of concerns and pride in being a breeding ground for successful start-ups — James Treybig, a former marketing manager, founded the fail-safe computer company Tandem in 1974, and former engineer Stephen Wozniak set up Apple Computer in 1977.

The company does not want to go the way of Fairchild Camera and Instrument Corporation, which lost most of its top engineers to the semiconductor giants in the late 1960s.

Despite these problems, the Hewlett-Packard computer divisions have expanded more rapidly than the others in the company and in 1982 DP products com-

prised \$2.2 billion, or 51% of the total company sales. That figure places it seventh worldwide in the computer business, with IBM (\$31.5 billion) in the lead and Digital Equipment (\$4.0 billion) in second place.

Hewlett-Packard claims the gap is still smaller if one looks at the small computer systems businesses in those companies — it puts IBM at \$8.8 billion and DEC at \$3.2 billion.

With rapid growth making the DP part of the business the main revenue earner for the future, but



The company's move into computers in 1966 placed it in a different ball game, which it is only this year fully beginning to adapt to

with several minicomputer companies reporting slippages in their revenue growth, it became apparent to Young that change was necessary, to close the gap with IBM as well as securing the longer term growth path.

The problem Young faced was how to keep the balance between informality and rationalisation. "Becoming a computer company has had a dramatic effect on our company," Young said earlier this year. "Our problem now is how to keep the best of our small-division, entrepreneurial system, find a strategic glue that can get the divisions working as a team, and rationalise to one computer architecture."

The solution, announced in February this year, was to shake up the organisation of the DP related side of the company by amalgamating the 22 data processing divisions into five main groups, while maintaining the policy of accessible and informal "management by walking around".

The change, which is organisational and not physical, is scheduled to be complete by November 1 this year, and marks the transition of the DP products side of Hewlett-Packard from a product-driven to a market-driven organisation.

Each of the five new groups is managed by a vice-president and combines the technical and the commercial areas. The groups are:

■ The Information Products Group under Dick Hackborn, which will be responsible for linking networking, data communications and peripherals. This group will liaise closely with:

■ The Computer Products Group under Doug Chance which is now responsible for both commercial and technical CPUs as well as producing integrated computer aided engineering software solutions.

■ The Personal Computer Group under Cyril Yansouni welds together the two personal computer divisions, and it is pulling out all stops to launch a business personal computer this autumn.

■ The Computer Marketing Group under Jim Arthur is now co-ordinating field sales, as well as systems and customer engineering.

■ The Business Development Group is a new creation which will under Ed McCracken, identify markets, set up systems marketing centres and be responsible for interactive marketing communications. It is this group that John Golding, business development group manager for the UK, thinks "is the missing element in a cohesive marketing approach that will let us roll from number seven to number three".

Roger Cooper, Hewlett-Packard's European sales manager, aims to beat IBM at its own game with the aid of the Business Development Group: "In the past we have had the products, but IBM has had a superior selling, marketing and support organisation. We have realised that the customers want."

The tighter organisation reflects a tighter strategy for the future. With hardware prices falling rapidly and software costs rising, the company is investing more heavily in software development, both applications as well as systems software.

The framework for the new strategy is called the manufacturer's productivity network, which focuses on helping manufacturers link their computer applications and resources.

It concentrates in four areas, matching the main manufacturing operating functions: computer aided engineering; factory and plant automation; administrative and office services; and operational planning and control systems.

"We understand manufacturers because we are a manufacturer," said Roy Hardcastle, the UK sales development centre manager, "and our aim is to provide solutions in those areas. We aim to concentrate on what we're good at and our strength is networked interactive database systems."

The company readily acknowledges its past mistakes: "In the past we were arrogant towards third parties," said Cooper, "but now we recognise that there is an essential need for a third party channel and that they have vital

resources. We are now talking more in terms of what we can do for them."

The company's emphasis on standard solutions rather than customised solutions means that it will work closely with software houses who will provide the customised solutions. It also aims at encouraging OEM deals.

Cooper is looking towards DEC OEMs in particular, "especially the big ones doing high volume business. The way to talk to major DEC OEMs is to talk about areas of business where they have to change in the future, such as applications generators, Unix and so on, where they have to look towards new technology tools."

Although the company admits it was slow to jump on the business personal computer bandwagon, it is confident that it can catch up lost ground. "We missed the boat with personal computers," said Jeff Graham, European manager for major accounts and third party sales.

"We missed a few dollars early on — most of us caught a cold and it wasn't a case of standing back and watching the stampede. But the market is developing a strategy and there is still a lot of room for a strong vendor to drive that strategy. IBM isn't doing that."

Hardcastle gives another example of how the lack of a Business Development Group equivalent affected Hewlett-Packard: "We didn't do the market research on the IBM System 34 and missed out on opportunities there. The sales people didn't realise how small it was and we put up too large a system against it. We should have put the HP 250 against it, not the HP 3000."

But Hardcastle is confident for the future. "We have re-educated ourselves," he asserts.

However, one thing that the company does not want to do is throw the baby out with the bathwater. It does not want to lose the informality that Young last year called "the foundation of our whole strategy for success."

The informality aims at spreading effective communication both



HEWLETT (left) and PACKARD. Their garage workshop grew into a \$4.2 billion multi-national company.

up and down throughout the company and the two key policies to achieve this are "management by wandering around" — where managers go on the beat regularly, and the "open door policy" which employees can invoke to see superior managers about grievances.

The offices are open plan and senior staff are not partitioned off from junior staff. "A good illustration of the relaxed atmosphere comes across in Germany," said Graham. "While staff in a neighbouring company address each other using the formal 'sie' and 'Herr', at Hewlett-Packard we use the familiar 'du'."

Continued on page 13



COOPER aims to beat IBM at its own game with the aid of the Business Development Group.

COMPANY PROFILE



The hut where it all began.

Continued from page 12

But the company still needs new products. "New products are the lifeblood of our business," said Young. "At Hewlett-Packard, 70% of our 1981 order volume came from products introduced in the last four years. It's essential that all of us in this business remain continually alert to technological advances which offer potential for new or enhanced products."

The company is uneasy talking about future products, sharing a concern common with other manufacturers that users of existing equipment will unnecessarily get it down. But Graham is anxious to reassure them: "A new product doesn't mean that the old one is finished," he explained. "With us they are complementary. New doesn't imply successive."

The top priority is the personal computer, which is under test at the company's Grenoble plant. This will be an intelligent successor to the 120, 125 series of commercial micros and will act as an intelligent terminal to the HP 3000 Series of commercial minicomputers.

"Personal computer companies have to develop multi-terminal systems," said Graham. A small 3000 minicomputer is expected to be announced alongside the personal computer, which will also

integrate IBM PCs and allow them to be connected to shared resources. The company hopes that 20% of its revenues by 1985 will come from personal computers.

Hewlett-Packard also plans to introduce a new 32-bit machine which is completely MPE compatible but which also runs Unix and a new operating system HPE (Hewlett-Packard Executive). The new machine will be top of the 3000 range and is likely to be released in mid-1984.

The recently upgraded MPE, MPE V, is a "step towards this", said Graham. In the longer term the technical operating system RTE — which was recently upgraded to — and other operating systems will be available on the 32-bit 3000. The 3000 will be compatible with the 32-bit 9000 technical computer which went into volume production this year.

"DEC is trying to get one operating system with universal capability," claimed Graham, "but we're trying to get universal hardware capability and then change the operating system to suit the user."

In the meantime a Business Basic Compiler is being developed to link the two commercial minicomputer series, the 250 and the 3000 Series, by the end of the year, and the 32-bit 9000 Series will eventually be linked to other technical 9000s. The software from the technical micro, the 200 Series, will eventually be transportable to the 9000 Series through Unix.

Hewlett-Packard is steadily increasing its software development, concentrating on standard solutions within vertical markets. "We are committed to providing applications programmers with application production tools for the 3000 series," said Hardcastle, "and our applications packages allow users to do what they need to do better and faster than the standard packages they can write their own software in without dis-

turbing the source code."

Software development in Germany focuses on computer-aided engineering packages, and mechanical engineering software solutions, whereas in the US emphasis is placed on electrical engineering packages. In the UK, at Hewlett-Packard's Pinewood base office, productivity software is developed, while at the company's French plant at Grenoble much attention is being paid to connectivity between the technical 1000 Series and personal computers, and to linking various types of programmable controllers.

Cooper confirmed that there is activity on the PABX front: "We



One thing the company does not want to do is throw the baby out with the bath water. It does not want to lose its informality

are currently certifying certain PABXs — we are talking to Pleasance in the UK, to Rnlm in the US and to Northern Telecom."

Looking into the more distant future, Hewlett-Packard's R & D laboratories are working on future generations under Joe Birnbaum, ex-head of IBM's R & D and now head of Hewlett-Packard Lab's computer section. "The old idea of an operating system is the bigger the better," said Graham. "But now they reckon the smaller the better and bolt on the bits you need. The labs have by-passed optical fibre technology and use

infra-red interfaces."

There are several manufacturing plants in Europe, each concentrating on different products. The new Bristol plant, which has started to produce advanced disc memory devices is expected to employ over 1,300 people by 1985.

The technical Series 1000 and Series 100 and 120 computers are manufactured at Grenoble and the commercial series 250 and 3000 minicomputers, together with the technical 9000 series 32-bit machine, are manufactured at Boeblingen, in South-west Germany.

"To attract the best qualified people, we build our facilities in desirable locations, often near university campuses where our people can continue their education," said Young, explaining the choice of locations.

Hewlett-Packard has teamed up with the Japanese company Yokogawa to make the technical 200 and 1000 Series for the Japanese market. Terminals are manufactured in Taiwan and a plant is scheduled to open soon in Mexico.

In all of its manufacturing plants the company uses its own equipment wherever possible, from electronic test equipment in business systems and software for a range of administrative services.

"An important part of our manufacturing strategy is that the quality control manager is a key person who reports directly to the general manager and not to the manufacturing manager," said Graham.

Hewlett-Packard's manufacturing plant at Boeblingen illustrated the company's production philosophy. It is in the heart of an industrial area south of the university town of Stuttgart and employs 110 people to make the commercial HP 3000 and HP 250 minicomputers as well as the technical 9000 Series. The striking feature of the factory is its quietness — it is quieter than an average office.

The plant produces around 115-

130 HP 3000s and about 150 HP 250 machines each month and every effort is made to cut down overheads and increase efficiency. "We have the cabins from outside vendors — so instead of making custom docks, the craftsmen of the Black Forest are now making computer cabinets," said Hartmut Halverscheid, production manager for the 3000 and 250 production lines.

The integrated circuits are put into the boards automatically with an Amistar CI-1800 automatic loading system, which takes three seconds for each insertion, but the capacitors and resistors are loaded by hand using an actual board as a template.

The minicomputer boards are tested on the HP 3060 board test system which tests components, shorts and opens, and for function. For the 9000 series it picks up etching, soldering and components failures.

"We test 3.9 million components a year and save £20,000 a year by using automatic test equipment," said Halverscheid. "This year we are 20% down on component failure detected by our customers outside and 40% up on failures detected in-house, because we are catching them earlier."

Halverscheid aims to get productivity up next year by cutting down on cable — "cable trees are the old technology" — and over the next few years plans to extend automation to loading capacitors on to personal computer boards.

Halverscheid's aim is to keep machine growth rate above that of the direct labour force. "At present we have a yearly growth rate of 25% for the machines and about 12% for the direct labour force."

The shop floor, where the machines are produced, is on a separate wing of the sales, marketing and administrative building and integrates effectively with the rest of the building, even sharing the same computerised canteen.

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major force in the computing industry. Sara Underwood looks at the success story

He said that US orders were

Designed for the computer-aided engineering (CAE) market, the 9000 was HP's first 32-bit computer family when it made its debut in November last year. Built around the company's proprietary Focus 32-bit chip set, which is claimed to include some of the densest semiconductors on the market, the system can accommodate from one to three CPUs and be packaged in either a desk-top unit, a rack-mountable box or a minicabinet, which forms the hub of single or multi-user configurations.

Variations on the theme are endless, with a bare minimum OEM box with single CPU and RAM costing around £16,000. But, as

number on the systems installed base it is already considered by some to be the ultimate in desk-top computing.

HP's latest enhancement to the A-Series is a compact micro-

MPE-V can support up to 40

One up from the 85B are the 86A and B, offering a maximum of 640 Kbytes of RAM, plus an expansion slot on C/M. These systems are not integrated and cost around £2,000.

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10



Capacitors and resistors are loaded on to HP 3000 boards at the Hewlett-Packard factory in Boeblingen, Germany.

support up to 128 Mbytes of data storage, mass storage up to 20 gigabytes, and to run high level languages.

the HP 3000 commercial range. There are four series

With the 12,000B, 3000

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120

Journal of Management Studies, 19(1), 67-80.

Address

HP 250 minicomputers are assembled in Germany



COMPANY PROFILE

Hewlett Packard products are used for as just as varied as the ranges themselves. From mainframes to micros — and the applications the

products are used for are just as varied as the ranges themselves. From honey packing to oil ex-

ploration, from petrol pump manufacture to sailing — HP computers are there somewhere.

Della Bradshaw investigates the far-ranging uses of the company's equipment.

HP wins through in the sailing season

THIS year's sailing season has particularly benefited from HP hardware. The French, Australian, American and British teams taking part in the America's Cup all had the loan of an HP 120 CPM-based micro. As the public relations woman put it: "You can either say we're unbiased, or that we're hedging our bets — whoever wins we get a story out of it."

The person in charge of the British team's micro is Robin Chapman, legal adviser and administrator for the team. He is incredibly enthusiastic about the HP 120, especially from the point of view of support.

"I know if I get stuck or some strange symbol comes up on the screen," he said, "I can just phone up and there'll be someone there to sort out the problem."

Chapman uses the HP 120 for general business applications, financial worksheets, wordprocessing and stock control via a database. In Newport, Long Island, the finishing point of the race, the speed and direction of winds as well as tidal changes are all worked out on the CPM micro.

Chapman, however, is more in-



The Queen is shown round HP's California plant by general manager of Data Systems Division Frank Navaril. Accounts at Buckingham Palace are worked out on the HP 250.

The HP 41 has found a niche in racing yachts for use in tactical planning. Nobody wants to spill the beans about how that is done — obviously a case of trade secrets.

In the Victory '83, the British entry in the America's Cup, the micro is being used to test real speed versus apparent speed in the hope that it will rush the British team to victory.

The HP 41 has also been taken on board races and has even made it to the top of Everest. And to cap it all, in the recent Space Shuttle mission each of the astronauts carried one of the micros as a back-up in case the main computer decided to opt out.

Data logging is another big use of the HP 41, as the clever little machine can read bar codes. And it can be used as a general micro for things like statistics and financial applications, as well as for circuit analysis for electricians, fluid analysis and aviation.

The HP 250 is no stranger to unusual applications either. Perhaps the most interesting one is the accounts in Buckingham Palace, but as we could not get a lot of information about that one we decided the Rowse Honey company came a close second.

Rowse Honey is the second largest honey packer in the UK, after Gale's. Honey packing is quite a complicated business, apparently, as Steve Rowse, managing director of Rowse Honey, pointed out.

"In our business the pricing is very important. There are about 50 different kinds of honey, which come in everything from one pound jars to seven pound buckets, and we sell those to everyone — from health food stores through the big supermarket chains to corner shops."

"Each shop or chain has a different price list — there are about 200 of them. In all, and there are about 250 stock items, so you can imagine the sort of figures we have to deal with."

Before getting the HP 250, Rowse Honey depended on a Kalamazoo paper system. In 1979 Rowse bought the 250 with one extra terminal and a 20 Mbyte disc, and the system has remained the same since then, although, as Rowse pointed out, "the system helped us to expand."

"We now have a turnover of £3.4 million," he continued, "and a staff of 50 people, but we still only have one person on the computer."

Rowse wrote most of the software for the system himself in conjunction with the software house Midas. Since then the software has

become the basis of several packages available from Midas.

"The whole system was designed to do a job," recalled Rowse. "In the honey business it's not necessary to hold stock, so we didn't need a stock control system, or some of the other basic packages that you can buy. And it's proved that if you can get a system in and working, it can be very successful."

"With the software the whole thing cost about £25,000, and that's nothing really for a damned good installation."

It may seem a far cry from honey to oilfields, but a company called BCL (Exploration Consultants Ltd), in Henley-on-Thames, has developed a software package on Hewlett-Packard's 9000 desktop computer to make the transition from honey packing to oil reservoir simulation look like child's play.

The new software designed by BCL will make its debut in San Francisco on October 5 on a Hewlett-Packard machine. Until now, the company has operated on a consultancy basis only, but it is now convinced the move into software sales will be a success.

"Most major oil companies have

their own simulators, and they will find it difficult to believe we can get such a sophisticated system on a desk-top machine," explained Brent Makinson, sales manager for BCL.

"At the moment there are 200 mainframe sites of this kind in operation and, with the lower costs, we estimate there will be about 2,000 smaller companies — those who work on contract and consultants — interested."

At about \$200,000 for the software, plus the hardware costs, the system does not look all that cheap to those uninitiated into the world of oil. But Makinson insisted: "All oil companies these days are being encouraged by their respective governments to maximise the extraction of oil from their oilfields. And so companies are spending a lot of money on systems to begin with to ensure they utilise the oilfields to the full."

To predict how a natural oil reservoir will deplete and where the oil company should drill to maximise production is more complicated than it might seem to the onlooker.

"The fluid in the rocks can move along the different layers at different speeds," said Makinson. "Our system also incorporates secondary techniques — for example, the company might want to pump in water round the edge of the bed of rock to maximise the extraction of the oil from the rocks."

BCL's reasons for choosing the HP 9000 for the design of the system were several. Firstly, it wanted to write in a standard language, Fortran 77, so that it could be transferred on to other computers. HP also gave BCL a pre-release version of Unix adapted for the HP 9000.

It was also a question of size and money: "It's a very cheap way of setting up your own reservoir simulation system," concluded Makinson.

Also at the larger end of the HP scale is the 3000 range, various models of which are used in all

kinds of applications, including manufacturing. A good example of a company using such a system is Gilbarko, a subsidiary of the Exxon group which specialises in making petrol pumps. The firm has a turnover of £20-25 million and employs over 600 people.

The data processing manager at Gilbarko is Tony Pace, a man with strong views on data processing and on the computer Press. "Why do you people in the media never mention Hewlett-Packard?" he protested. "They really seem to have found a way of making computing simple — you just plug it in and it runs, it doesn't need to be complicated."

"I'm not a computer person myself: I was determined computing was going to be easy, and it was. I'm an angry user — angry far HP not against them."

Gilbarko installed its system in 1981 — before that it was a bureau, which was becoming relatively expensive. Pace opted for an HP 3044 system, with three Mbytes of main memory, a 780 Mbyte disc, two printers, a tape deck and 50 terminals.

The system is dedicated to manufacturing and all the paperwork that involves. "We wanted a system, not a computer," recalled Pace. "We looked at six companies — Nixdorf, NCR, ICL, IBM, Syntex and HP — and the only real challenge to HP was Syntex, in terms of price, ease of use and high degree of systems integration."

"Our main line in software is in general packages, in the manufacturing and financial areas, but we wanted packages that worked together — and we've got them."

COMPANY PROFILE

Massive range of hardware inspires software harvest

Paul Walton attempts to get to grips with the large variety of HP software

THERE is a great deal of software, most of it for technical users, for Hewlett-Packard machines. But does it really matter?

People buy HP minicomputers because it is probably the most reliable, and the best supported in the world," according to Peter Guymer, manager of Systems and Software Division. "They don't quibble over cost either," he added.

This has the effect of making the HP system building market larger for HP than for, say, Digital Equipment or Data General. But HP's early entry into the technical and engineering market has meant that plenty of those turnkey jobs are now around as packages.

There is a much smaller, but growing, amount of commercial software for the massive range of HP hardware. Guymer thinks that HP has realised quite recently that "if you don't sell all these little like wordprocessing or office automation, then you might be thought of as a little behind."

It is difficult to cover the entire HP range, as the five major products all have their own peculiarities in both systems and applications software. The major changes taking place have been in commercial software for HP's 3000 series minicomputers.

The 1000, 9000 and 9800 series technical machines are established scientific and engineering workhorses, with a large installed base in the less glamorous field of manufacturing.

Prime Northwest, head of HP's data systems division, recently valued some improvements to its manufacturing productivity network (MPN) which runs on the 3000 family.

He said that a powerful factory local area network (lan) was being developed by HP in collaboration with two of its largest US customers (thought to be Ford and General Motors) to bring real factory automation.

Navaril outlined the connection of office and factory-based HP machines by means of a more robust version of the Ethernet lan. It is expected to be broadband, and capable of carrying much heavier traffic for less cost and of working in difficult conditions.

HP has two main technical machine ranges: the 1000 series 16-bit minicomputer and 9XXX range, including the monster-size 9800, and the new 32-bit 9000 series. Both come with a great deal of proprietary HP software.

Running on HP's Real Time Executive (RTE) for the 1000 series are process and production control, computer aided design (CAD), and design and manufacturing (CAM) packages. Most can be run on the MPN, and many have direct interface to NC machines tools.

Back in the factory office, the 9000 series is found doing CAD/CAM and more detailed engineering graphics for the draughtsman, using its much larger memory. The recent 9000 series is the first HP 32-bit minicomputer.

collaborating with CAD/Pace to bring all its Unix-based applications 9000's HP-UX version of operating system.

9000 series does have applications other than commercial engineering, doing materials management, as well as accounting with some packages.

There is a separate personal division, with three



GRAHAM... A second proprietary system is to be added to the Multi-programming Executive.

ranges now available, all running CPM. The baby series 80s are really intelligent technical terminals. Series 100 and 200 rise to more powerful 16-bit Motorola 68000-chip systems, which can also participate in HP lans.

There are almost as many HP lans as there is hardware. Local Resource Manager (LMR), for instance, is simply a shared resource cable that allows Series 200 or 100 to link up to 3000s, or to share peripherals and disc store.

The major HP communications

for all this excitement is the expected launch of HP's first true 32-bit 3000 machines in mid-'84. All of the company's commercial minicomputers are 16-bit at the moment.

Peter Guymer, who has struggled with the MPE operating system, of which he is not overly fond, pointed out why HP needed to go to 32-bits and a new operating system. Much of HP's operating and systems software is aging, and is based on older concepts now out of fashion.

"MPE is not real-time or virtual," he said, "so that limits your applications. Most of the system tools and concepts that underlie the range have not changed since the 3000 was launched in 1977-78, so it is time to catch up."

The two main system tools for the 3000 — with equivalents on the 1000 series machine — are HP's Image database and View screen formatter cum Transaction processing (TP) monitor (though it is not a real-time machine).

Writing real-time programs for the 16-bit machine "drains its I/O so much, that the processor can hardly cope," Guymer said. So HP discouraged use of the present 3000 series for all but simple transaction processing.

The Image database was difficult to use for program development, he added, since the 3000's memory is arranged in 64K stacks, rather than being mapped on to the available internal store. "It is very easy to run out of space if you're writing an application," Guymer said. Enhancements to storage space also don't help.

The view screen formatter was an essential addition for program development. Without its ability to write whole screens of information in "block mode", every application would have to have been built line by agonising line, according to Guymer.

HP has quite recently released its Rapid software development aid, but it is aimed more at the technical than the commercial market. "I want a program generator that can produce Cobol, which Rapid cannot deliver. Data General offer this as standard, and over half the commercial market need it," Guymer said.

The final criticism of HP systems software is that, like many other suppliers, it is written to run an object code, within defined parameters. That made it very hard to maintain, or to develop an

application, Guymer added. Fine for production control, but a limitation to commercial packages.

If HP systems software has these limitations, then why do people buy the hardware at all — to use themselves, or to write applications for and sell systems?

Systemsolve is one of the largest suppliers of commercial packages and turnkey systems. According to Guymer, there were good reasons why an HP system was chosen, and none of them had much to do with the software available.

"A significant number of companies buy HP kit before even considering the software, in some cases before looking in detail at that application."

He added that as well as its reliability being a major factor in this decision, "a lot of the subsidiaries of US corporations actually have a policy to buy HP hardware."

What this means is that, for commercial applications, three quarters of HP orders are turnkey and very often bespoke systems. "For the guy who already has HP kit, has justified its initial cost, and wants to do something else with it," Guymer said.

Systemsolve's experience is by no means unique. Datalogic, Frazer Williams, Silicon and Hoskyns also do a great amount of turnkey work with HP machines. The trend extends beyond the commercial 3000 series to the technical machines as well.

But as turnkey work has been going on longer for the scientific and technical market more packages have been spun off. Systemsolve sells the Electronic Newsroom System (ENS), which it developed for the BBC Breakfast Time show, as a £50,000 package.

It is close to first sales of the packaged system in the US.

HP's third party software market is nonetheless healthy, despite the amount of bespoke work being done. Systemsolve is the biggest commercial software supplier here, with Riva the largest technical package dealer.

Riva sells automation software, technical and engineering aids (some on obscure languages), as well as a large selection of vertical market software for retail, distribution and point-of-sale.

Scicon follows Riva with pollution control, maintenance, integrated manufacturing and distribution software.

Systemsolve, Cogson and Frazer Williams are very big suppliers of financial and general business software.

CAP and Hoskyns are involved in production control, integrated manufacturing and technical developments such as Unix. CAP is especially close to HP, working with it on a wide range of systems from military to commercial.

Guymer admitted that Systemsolve did buy in its HP general accounting package, but its first application was to build that into the Booksolve turnkey system it had been contracted to produce.

The difficulty of writing applications must have something to do with this lack of dynamism. HP is already trying to stir up enthusiasm for the 300 series with plans for 32-bit virtual operation with hints that there will also be some goodies coming for the series 80, 100 and 200 microcomputers.

The latest release of MPE, version V, is the most radical change for many years. It has introduced disc caching to release more internal store for development,

"which is supposed to increase the throughput by 30%, for some applications", said Guymer.

But the major change must be the release of the 32-bit hardware, and the necessary tools to convert existing applications (largely written in Fortran and Cobol) and ease the development of new ones. Unix will also add new third party packages — HP and CAP are collaborating on this development.

HP has tried to stimulate the development of commercial applications for the 3000 series before, with some international success. The HP Software Guide became a major promoter of packaged software, long before ICL or any other supplier hit on the idea.

The company has not stood still. It has recently stunned systems houses with its first release of major chunks of commercial applications software, like the Interactive Office (IO). But Guymer was less than complimentary about the suite of integrated word/data/graphics packages that go to make up IO. He claimed that these could not compete with 32-bit offerings from Data General and DEC.

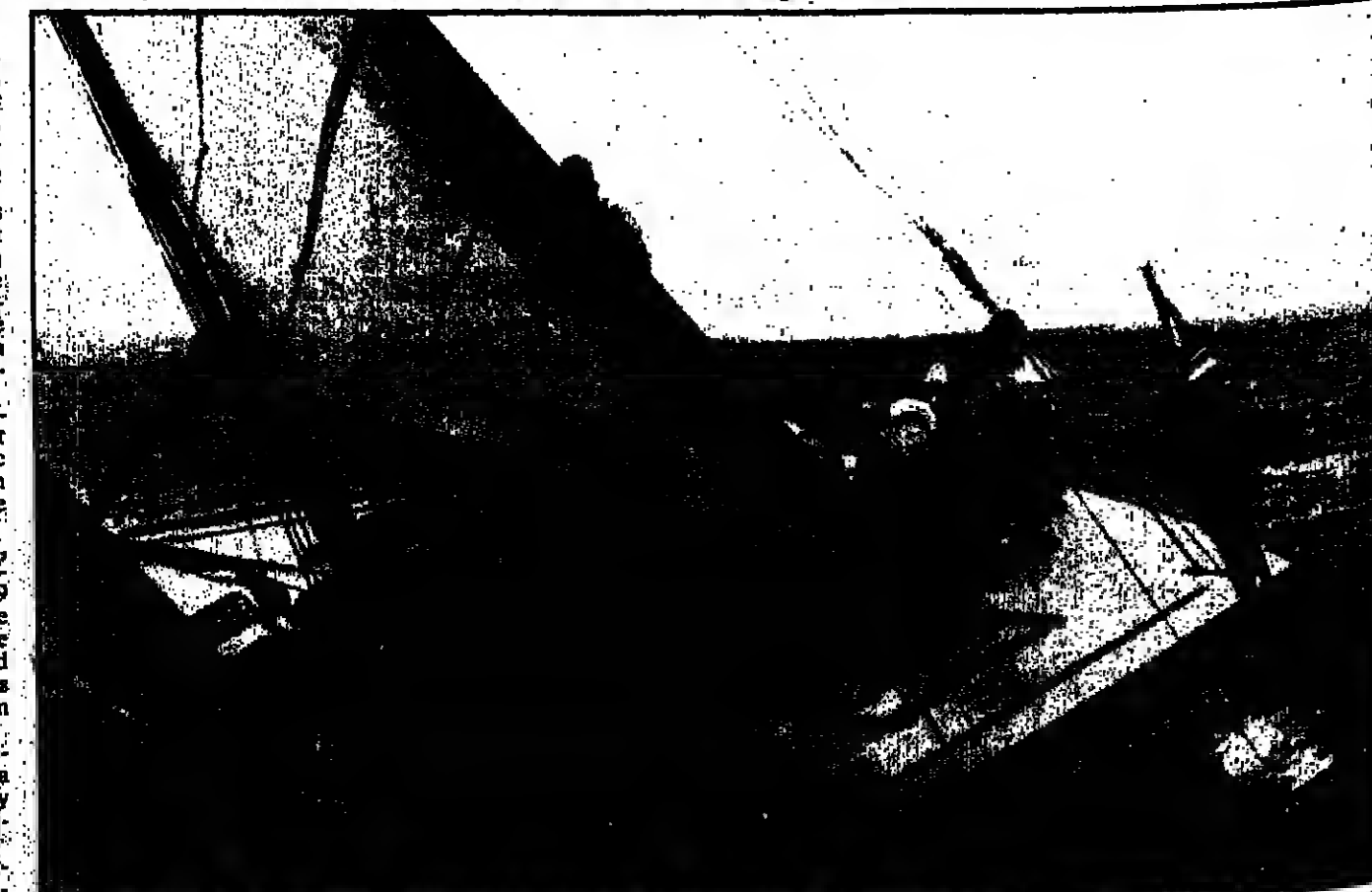
One application that HP is traditionally good at is graphics, but again this tends to be limited to very sophisticated pieces of software, which need the 32-bit processing power of the 9XXX technical machines.

Guymer said that HP could sell these expensive systems into the technical market "where it is not cheap, but where it doesn't need to be because it is the best", but not to most commercial users.

So, the wealth of graphics and sophisticated communications software that HP sells on the 1000 and 9XXX series does not travel well into the office.



Systemsolve developed the Electronic Newsroom System for the BBC Breakfast Time show, presented by Ffion Brough.



Victory '83 sails off Newport Rhode Island, US, where speed and direction of winds and tidal changes are calculated on the CPM micro.



"Most major oil companies probably won't believe we get such a sophisticated system on a desk-top machine."

interested in the value of the hardware. "I have to travel a great deal to places like Amsterdam and the US. When I go over to the States I don't need to take the machine with me as HP provides one for me over there. But obviously for Europe I need something portable, and the 120 fits into two cases."

"Before we got the HP we had an Apple and we hired an Osborne. With the Osborne the floppy discs got damaged quite easily in transit. With the small 3 1/2 inch discs on the HP machine I just throw them in a briefcase and take them out unscathed."

Chapman got the HP 120 in April. "But if we'd got it earlier," he said, "we could have done much more with it."

At about the same time the British crew in the America's Cup obtained another HP micro for a very different purpose — the HP 41, hand-held micro, which the crew use for navigation.

Barry Clark of Hewlett-Packard explained how it all worked: "Astro-navigation depends on the almanac, which is 56 stars and planets, and that is stored in the 41. Each almanac has to be updated every seven to 10 years, depending on the algorithms."

The crew of the yacht note their time and altitude and then note down two stars to get a point fix. If they can identify three stars they can get a cocked hat fix."

It all sounds very specialised, but the use of hand-held computers in sailing and other outdoor activities appears to be taking off.

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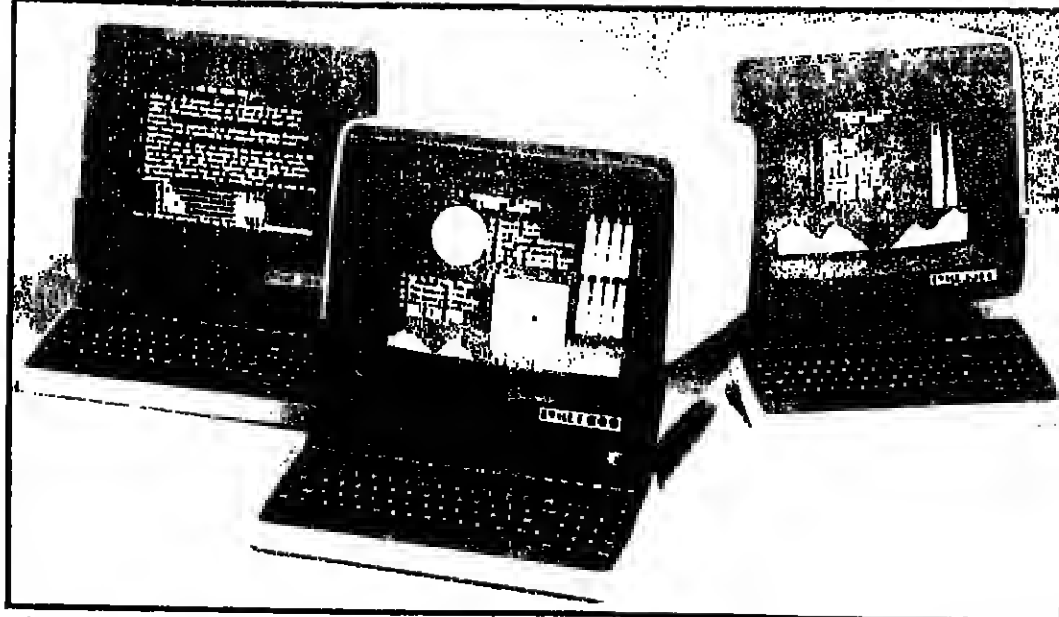
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The Lyme family: now compatible with the DEC VT100.

Lyme terminals DEC compatible

USERS now have a UK-built alternative to Digital Equipment's VT100 display terminals. Gresham Lion Electronics has introduced software which makes its Lyme 5500 and 6000 terminals compatible with DEC's VT131 specification. The software includes the Advanced Video Option feature, plus a block transmission edit facility for data preparation.

With the edit feature any attribute - for example bold or colour text - can be defined as being protected. This means the fields keep the attributes when data is erased and when new data is entered.

tered it takes on the colour or other attribute. Different fields can be entered and checked and sent as one block to the host computer.

The standard command set of the Lyme terminals is based on the DEC VT32, so the new option means there is code compatibility across the range.

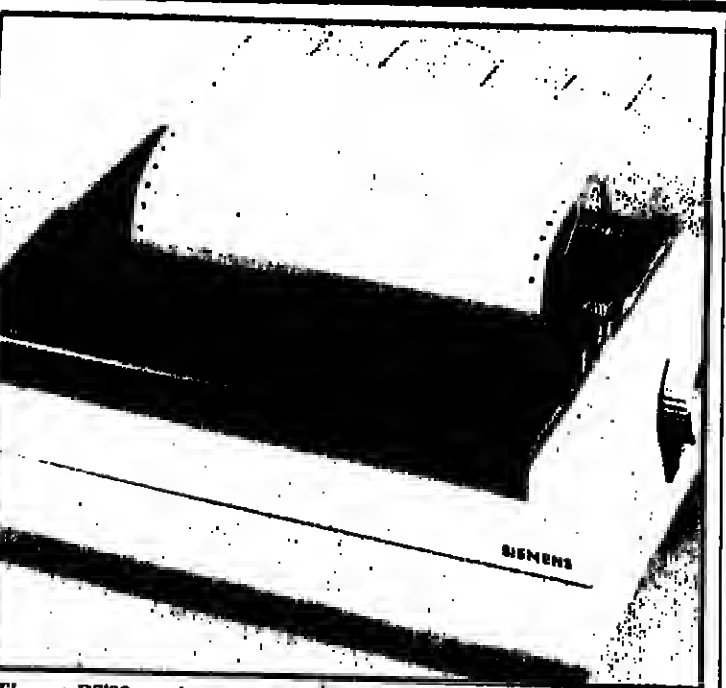
Standard features of the Lyme range include eight-page memory; page scrolling; 80- or 132-column display; the ability to write to other, undisplayed pages; editing; and 48 programmable functions.

Options include up to three alternative character sets - the user

can define the 127 characters in each set, if necessary - plus graphics. The graphics facility is added by plugging in an extra circuit card. Options include 512 picture elements by 256 and 400 by 300 in black and white or 256 and 400 by 300 in colour.

Recent enhancements include an optional touch-sensitive screen and a colour printer.

Gresham Lion Electronics (CW), Gresham House, Twickenham Road, Feltham, Middlesex TW13 6HA. Tel: 01-894 5511.



The new PT88 matrix printer from Riva Terminals

Printer cuts the noise

RIVA Terminals has announced the low-cost Siemens PT88 matrix printer for the microcomputer market.

The PT88 comes with an ink-jet printing mechanism for quiet, high speed, high quality printing, and the PT88n with a needle printing mechanism for applications which require copies.

The announcement follows the signing of a marketing agreement between Riva Terminals and Siemens.

The ink-jet printing mechanism of the PT88 eliminates the noise associated with conventional

printing techniques says Riva.

The PT88 optimises bi-directional printing at speeds of 150 characters per second on the ink-jet printer and 80 characters per second on the needle printer. A related faster ink-jet model operates at 270 cps. The new printer, interfaces via a serial asynchronous RS232C or parallel Centronics-type 8-bit interface to most types of microcomputer.

Riva Terminals (CW), Woking Business Park, Albert Drive, Woking, Surrey. Tel: (04862) 71001.

Launch of miniature keyboard range

INTRODUCTION of a range of low-cost miniature 55-key qwerty keyboards, the Series 55 is announced by McMurdo-Oxcom. Measuring 238 x 115 mm (9.4 x 4.5 in) or 280 x 176 mm (11 x 6.9 in) inclusive of case, all are designed to overcome space limitations experienced by manufacturers of terminals, personal computers, medical electronics and automatic test equipment.

The series uses a three-layer polyester film membrane switch matrix beneath a mat which in

turn supports the keytops and provides smooth positive tactile operation.

Interfacing is organised as an 8 by 8 matrix terminated in two flexible printed circuit tails, fitted with 2.54 mm (0.1 in) pitch connectors. An additional plug-microprocessor board provides parallel or serial ASCII encoded data outputs.

Parallel transmission is TTL positive logic in seven data bits plus handshaking, with strobe. Handshaking is available as an option. An internal power on reset

signal initialises the program at switch-on. Serial data transmission is either RS232C or current loop with selectable data rates from 300 to 9600 bauds.

Encoded keyboards operate in four modes: unshift, shift, control and control shift, with auto repeat on all keys. Shift lock, which is performed electronically, is indicated by a front panel-mounted LED.

McMurdo-Oxcom (CW), Redney Road, Portsmouth PO4 8SG. Tel: (0705) 735361.

Teaching at the touch of a button

A NEW teaching machine, the ITM Grundy Tutor Mk.II, from International Tutor Machines, is based on a hardware package consisting of the Grundy New Brain desk-top microprocessor, a cassette recorder, and a visual display monitor.

The microprocessor, which has a full-size keyboard with standard layout and full-travel keys, produces characters in black on green on the monitor.

The Tutor's software, stored on magnetic tape, consists of a current library of over 70 complete courses on subjects which include applied mathematics, thermodynamics, electronics, chemistry, business computers, theory of flight, and double entry book-keeping.

The teaching method is based on interactive programming, whereby the VDU asks questions of the student who presses the appropriate button on the keyboard to reply. Depending on the quality of the answer, the VDU will either direct the student to the next step, or refer him back to revise earlier steps.

Some of the outstanding advantages claimed for the new system are that it permits the student to learn at his own pace, to study at the time, and in the environment, which is most suitable for him, and to revise each step thoroughly before advancing.

Similarly, the "friendly" interaction of student and teaching machine ensures that the student can advance to his appropriate

level in the course, without repeating earlier tuition.

In many educational establishments, existing computer facilities are generally reserved for the science students. The cost of the ITM Grundy Tutor Mk. II now gives students of the humanities the opportunity of using this advanced method for their subjects, says ITM.

The new teaching machine is said to be ideal for language courses which will be added to the ITM library shortly.

Apart from academic subjects, other applications for the ITM Grundy Tutor Mk.II are in skill centres, training programmes for the armed services, and technical re-training generally.

The NewBrain Microprocessor is a personal computer which, with the addition of a printer, can be used as a word processor - an additional boost for a teacher preparing work after school hours.

The ITM Grundy Tutor Mk.II is descended from the electro-mechanical teaching machines pioneered by ITM some 20 years ago. These machines were costly, and their use inhibited by the high level of maintenance required, and the initial expense of the courses which were contained on 35mm film. Microprocessor technology has overcome these difficulties, and some of the most authoritative courses covering a wide, and increasing, range of subjects are now available to teacher and learner alike, says ITM.

ITM (CW), 15 Holder Road, Aldershot, Hants.



The ITM Grundy Tutor Mk. II.

First of laser printer family

DIGITAL Equipment has announced the first of a family of high speed printers which will use laser technology to produce book quality text at the speed of a computer line printer.

The new model, the LN01, employs electrophotographic imaging and xerographic printing, which means that every page printed is an original. It is capable of printing 12 A4 pages a minute and is available to users of Digital's Vax systems.

The LN01 has a graphics capability which embraces logos, signatures and half-tone images; and is quiet because of its non-impact operation.

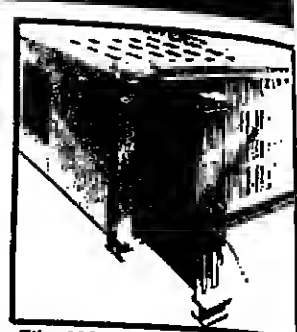
The printing process involves the formation of a latent electrostatic image by a laser beam selectively discharging areas on the surface of an electrically-charged photoreceptive drum. A visible image is formed on the drum's surface by attracting a dry ink; then the image is transferred to paper and permanently fixed by means of a fuser assembly.

The LN01 is designed for many applications and is suited for production volumes of up to 15,000 pages a month.

Digital Equipment Company (CW), Digital Park, PO Box 110, Reading RG2 0TR. Tel: (0734) 868711.



Digital's new LN01 laser printer.



The Able Attach.

New concept in multiple connections

ATTACH is a concept from Able Computer, connecting multiple communication lines to one or more computers. The new system is compatible with Digital Equipment Corporation's Vax, PDP-11, DEC System 10 and System 30 computers.

The Attach system allows up to 128 terminal lines to be connected via a single composite cable. Terminal clusters can be remotely located up to 1 km (0.6 miles) from the host interface.

Data integrity over the long line is assured by the intelligent Attach interface which uses synchronous protocol for error detection and recovery. A host adaptor module installed in the computer converts the messages received from Attach into an interface recognisable by the host computer software.

The hex size Attach host interface will logically support up to 128 terminal lines, yet requires less power, mounting space and has loading than existing 8 or 16 line multiplexer boards, says Able.

The Attach system includes eight-line line adaptor modules with the capability of "hot" replacement for superior system support. Each module in the Attach system has its own on-board diagnostics that automatically activate at each power-on. The supervisor control also can initiate the diagnostics independently.

Other features of Attach are the ability to support multiple host adaptors, allowing system back-up configurations as well as performing a basic switch function. The supervisor allows the reassignment of terminals to different line identities or even to a different host.

A printer port is provided to allow for a hard copy record of all system configurations, providing improved security. The modular hardware building blocks of the system permit easy installation, expansion in eight-line increments, and repair.

The first implementation of Attach will be a remotely located large line application with multi-host capability.

Able Computer (CW), 287 London Road, Newbury, Berkshire RG13 2QJ. Tel: (0635) 32125.

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25 South Street, Reading, Berkshire RG1 4QU
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Computer operations and support manager

Circa. £13,500 EAST ANGLIA

Following a recent review of the Company's Information Processing Strategy, and the enlargement of its systems team in Norwich, a vacancy has arisen for the new position of Computer Operations and Support Manager.

Reporting to the General Manager, Information Systems, the successful applicant will be responsible for the operation and control of Colman's computing facilities.

This comprises a growing number of computers on site as well as a Remote Job Entry facility and a large number of on-line terminals linked to an IBM 3032 in Hull. By the end of 1984 full operational control of all job submission and processing (including job recovery and reruns) for Colman's systems on the IBM 3032 will be his/her responsibility.

The job holder will also be responsible for the planning and acquisition of hardware (in line with company strategy), for liaising with hardware suppliers over maintenance contracts and engineering support, and for providing an operational support service for all installed hardware within Colman's. In addition, he/she will control all consumables associated with the installed hardware.

The co-ordination and implementation of a disaster recovery plan and security dumping of production systems will be a basic part of the Operations and Support Manager's duties.

Applicants for this senior position must have several years' experience of computer operations and support in a multi-user, multi-shift environment, including a sound knowledge of job control procedures and associated software (e.g. DCMs) for all systems on the IBM 3032.

Colman's of Norwich is part of the multi-national Reckitt & Colman Group and this post carries the usual benefits associated with a large progressive company. Applications, giving full details of qualifications, experience and current salary, should be sent to Mr. J. E. Barley, Personnel Department, Colman's of Norwich, Carrow, Norwich, NR1 2DD to reach here by Monday 5th September, 1983.

Colman's
of Norwich

CABLE TELEVISION AND COMMUNICATIONS

SENIOR PROGRAMMERS

CABLETIME is a newly formed company involved in the design and implementation of cable television systems, based in pleasant offices in central Newbury, Berkshire.

To assist in this new venture Cabletime are looking for Senior Programmers to join their team of highly qualified engineers. Cabletime's advanced fibre optic based system embodies a multi-processor network linked to DEC PDP and VAX computer systems. Expertise is required in developing existing software and particularly to design and implement new packages using the RT11, RSX and VMS operating systems. Suitable candidates would be qualified to degree level or equivalent, have at least two years' experience in the design and implementation of real-time systems using DEC hardware and software.

If you are interested in an exciting career with this new venture forward a detailed c.v. or telephone. The Personnel Officer, Cabletime Limited, 17 West Mills, Newbury, Berkshire. Tel: Newbury (0635) 48222.

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CHASE SYSTEMS LTD., St. Leonards
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London SW14 7LY. Tel: 01-878 7748.
(0688)

BOX NUMBERS

Box number replies should be addressed to:

Box Number
c/o Computer Weekly
Quadrant House, The Quadrant
Sutton, Surrey SM2 5AS

The Lovell Construction Group is expanding its head office computer department located in Gerrards Cross and will soon be taking delivery of an ICL 2867 using VME/TPMS/DDS/IDMS. We now have the following vacancies:

Programmer

£9,000

Must have a minimum of two years' COBOL experience and ideally will have worked with ICL 2800 equipment.

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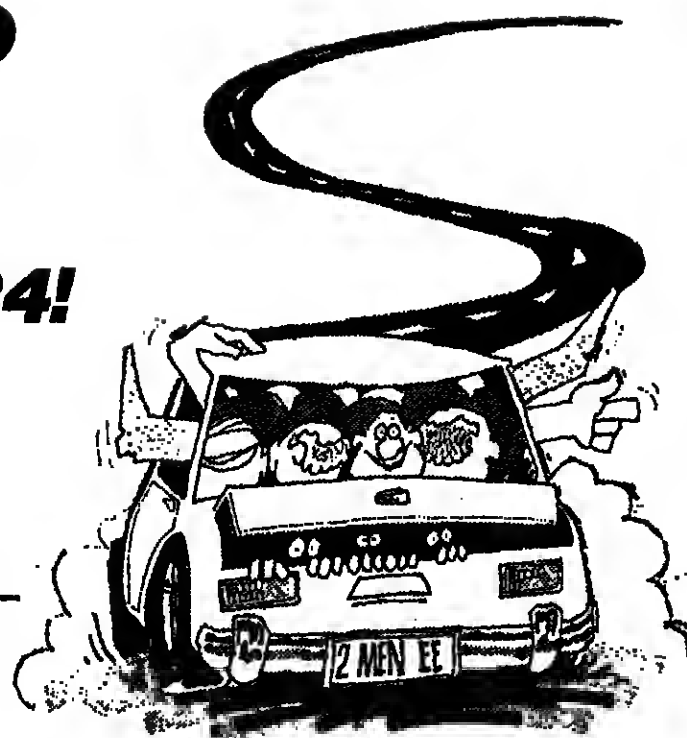
For further details and an application form please contact: G. C. Leon, Personnel Manager, Lovell Construction, Marsham Road, Gerrards Cross, Bucks SL9 6ER. Tel: Gerrards Cross (0753) 862211.

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IBM Network Controllers
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Contact: ALAN PAINE, MARK ATKINSON
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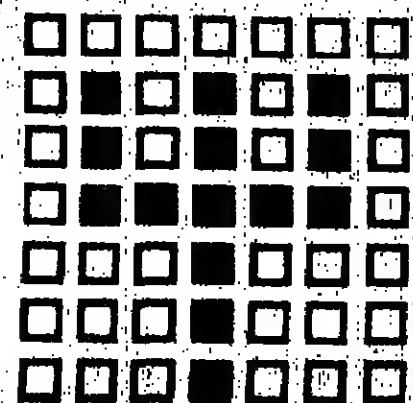
URGENT SALES OPPORTUNITIES
Contact: FRED BRAMLEY

Accounts Manager - Mini Computers £30k Ref: F85
Mini-Micro Sales Executives, target earnings £25k Ref: F82
Financial Systems Sales Executives, target earnings £25k Ref: F81

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IBM Sys 34 RPG II An/Prog. c £10k, City Ref: J169
ICL COBOL Progs. Surrey/Middlesex to £8.5k Ref: J189
Honeywell Progs. or An/Progs. with IOS end TDS, Surrey, to Ref: J183
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Contact: PETER JEZEPEH for an immediate confidential interview or write, enclosing a detailed c.v.

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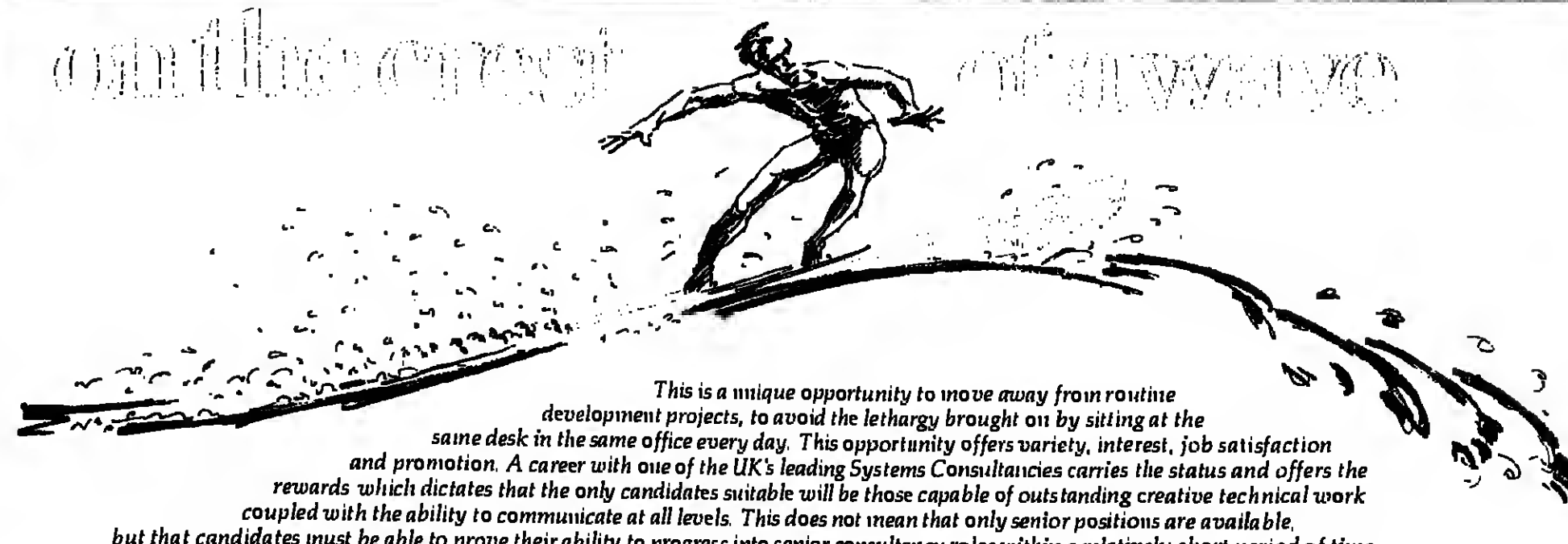
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This is a unique opportunity to move away from routine development projects, to avoid the lethargy brought on by sitting at the same desk in the same office every day. This opportunity offers variety, interest, job satisfaction and promotion. A career with one of the UK's leading Systems Consultancies carries the status and offers the rewards which dictates that the only candidates suitable will be those capable of outstanding creative technical work coupled with the ability to communicate at all levels. This does not mean that only senior positions are available, but that candidates must be able to prove their ability to progress into senior consultancy roles within a relatively short period of time.

CONSULTANCY IN COMMUNICATIONS

£12,500 to £18,000

Senior systems designers and analysts are required to join an advanced technology division of the company, working on system performance and design aspects of a number of new development projects in the Defence field. Experience of working on systems or sub-systems of any major communications development would be useful, although general experience within communications systems design, analysis or programming would be of interest.

There are a variety of hidden benefits to these positions, other than an excellent and attractive income package. The projects will generally be within the area of future requirements analysis and design spanning the next couple of decades on behalf of a number of organisations, breaking completely new ground in fields only lightly investigated up to now. This will include selection and evaluation of Hardware and Software without any pre-determined preference or affiliation with suppliers.

DEFENCE SOFTWARE CONSULTANCY

£10,000 to £15,000

CORAL/MASCOT/VAX/DEFENCE APPLICATIONS. Development project team leaders, senior designers and senior software programmers will find a very wide range of tangible applications areas developing talents far beyond the potential experience achievable elsewhere. These fields include:

- * Command, Control and Communications
- * Expert Systems
- * Naval and Land-based Weapons Systems
- * Distributed data processing
- * Advanced Software Engineering

There are also some specific requirements for senior projects managers capable of business area development.

Salary packages will be commensurate with both current experience and future potential, and applications are invited from candidates with two to ten years experience. The company consists of young, energetic and imaginative people, and is expanding at the rate of 30% per annum. It is envisaged that this will continue and will result in many promotion opportunities being offered within realistic timescales.

CONSULTANCY IN SIMULATOR DESIGN DEVELOPMENT c. £14,000

There is an immediate opening for an experienced senior systems engineer to contribute to the company's expanding simulator business. The position will be based in either Central London or Surrey, and will involve taking senior level responsibilities for current projects in addition to developing the company's

activities in this field. Candidates should have proven simulator design expertise preferably within a defence-related industry and must be prepared to negotiate on behalf of the company at high levels.

SENIOR ELECTRONIC DESIGN ENGINEER/PROJECT MANAGER £14,000 to £16,500 neg.

Project Managers and Leaders are required to provide technical leadership to existing project teams designing Defence Systems. The opportunity to work on advanced digital electronic prototypes for various applications will provide a much wider range of experience than can usually be expected. Senior level

positions often involve working with more than one project team at any one time and therefore the ability to coordinate activities to make the most effective use of working time is important. Young engineers with positive drive and ambition will find these positions particularly rewarding.

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WILCOX is a British company which manufactures its own microcomputer and have already built up an impressive list of successful installations.

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COMMUNICATIONS SOFTWARE

Development Programmers to £16K

The International Distributed Systems Centre (IDSC) of Sperry, Product Division, is a software development centre of 50 professional staff specialising in customised networks and advanced data communications throughout the world. We are looking for self-motivated, highly qualified software specialists with a proven track record in data communications and distributed processing. Applicants should have 3-5 years experience of at least three of the following:

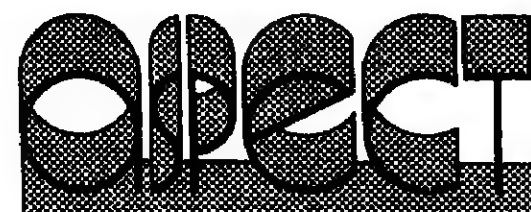
- *1100 Real Time Software (CMS, TIP, Telcon)
- *Handler Development (Bisync, TTY, X25)
- *Architectures (ISO, CCITT, SNA, DECNET, DCA)
- *Networking
- *New Services (Videotex, Teletex, Cable TV, Satellite)
- *SQA and support of data networks
- *Banking Terminals

New Graduates

We are also seeking up to six new or recent graduates preferably with a Computer Science degree who will be trained within the development and support groups. This will give those with less experience the opportunity to acquire the skills required in this complex and challenging software environment.

IDSC is located in an attractive self-contained facility in central London with easy access from Paddington, Marylebone and Baker Street stations. There is also a significant opportunity to travel both to the USA and throughout Europe. Currently there are projects whose customers are in Finland, Sweden, Germany, Switzerland and Singapore.

Please phone or write sending C.V. to: P. Murray, IDSC, 45 Crawford Place, London W1. Tel: 01-402 7221



computer recruitment limited

PROGRAMMING TEAM LEADER CITY to £13,000+MORTGAGE

This prestigious firm of Merchant Bankers based in the CITY wish to recruit a Senior Programmer to lead a team of programmers. They retain IBM 4341 running under DOS/VSE VM using COBOL, CICS and DL/I. This is a superb opportunity for a programmer to make a career move. If you have THREE YEARS' COBOL with some exposure to CICS & DL/I, ring now.

PL/I PROGRAMMERS C. LONDON to £14,000

Major expansion within this progressive company has led to vacancies for all levels of programmers. Opportunities exist for applicants with a minimum of 18 months' PL/I experience up to TEAM LEADER level. Our client offers TRAINING IN CICS AND DL/I, LARGE NEW DEVELOPMENT PROJECTS, rapid promotion, TRAINING IN Analysis and excellent fringe benefits.

COBOL PROG/ANALYSTS C. LONDON £11,000 NEG

This international company based in Central London seeks to recruit career minded individuals to enhance their young dynamic D.P. dept. They retain IBM 4341 running under MVS using COBOL CICS and DL/I. If you have a minimum of TWO AND A HALF YEARS' IBM COBOL, in return they can offer TRAINING IN CICS AND DL/I, large development projects and TRAINING IN Analysis.

ANALYST CITY £13,000 NEG+MORTGAGE

Our client, an International Bank with impressive city office seeks to recruit an ANALYST to work on large financial projects. Ideal applicants will have a minimum of ONE YEAR'S ANALYSIS and an IBM CICS PROGRAMMING background. Banking experience is not necessary as full training offered.

SENIOR COBOL PROGRAMMER C. LONDON £11,000 NEG

Our client seeks a Senior Programmer/Team Leader designate to run a team of Programmers. They are looking for a minimum of THREE YEARS' IBM COBOL, preferably someone with some supervisory experience and a confident personality. They retain IBM mainframes running under DOS/VSE and offer TRAINING IN CICS & DL/I.

COBOL PROGRAMMERS CITY to £10,000+MORTGAGE

This city based Bank are looking for two Programmers to work on an International Banking Project. Applicants should have a minimum of 12 MONTHS' IBM COBOL and 6 MONTHS' CICS. Ideally you should be ambitious as promotion to Team Leader within 18 MONTHS is envisaged. Co. offers excellent Banking benefits.

PROJECT MANAGER MICROS to £13,000

This prestigious city-based firm seeks a Project Manager to head a NEW MICRO-BASED INFORMATION CENTRE. Individual will carry out and control software projects. Company seeks a confident person aged between 25 and 35 who can communicate with all levels of staff.

Britannia Refined Metals Limited N.W. KENT COMPUTER SUPERINTENDENT c. £13k + car

Reporting to the Finance Manager the Computer Superintendent will be accountable for the day-to-day provision of computer services as well as the introduction of further major developments. A DP Professional is required and previous Management and Commercial Systems Analyst experience is desirable.

OPERATIONS SUPERVISOR To £10k

Reporting to the Computer Superintendent the Operations Supervisor will assume responsibility for the day-to-day control of Data Processing, Communications and Bureau Services. Experience of supervision, working to strict deadlines, liaison with outside bureaux and internal user departments are highly desirable.

Britannia Refined Metals Limited is a £100 million p.a. turnover subsidiary of a large overseas mining group. The refining of lead and silver from crude lead is carried out at the Company's Northfleet Refinery. Current Computer Services are based on an in-house mini computer with extensive telecommunications facilities and Bureau services. Please contact Robin Burnett, Personnel Services Superintendent, Britannia Refined Metals Limited, Botany Road, Northfleet, Gravesend, Kent DA11 9BC. Telephone Gravesend 51188. (5199)

ICL COBOL PROGRAMMERS/ANALYSTS

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These new appointments offer the opportunity of creative and innovative work in a stimulating project-based environment. TIPS Ltd, a fast expanding software house established for over ten years have positions at both Waltham and Waltham Cross offices.

As a Programmer/Analyst you will play a key role in the development and maintenance of a wide range of systems. You should have a minimum of 3 years experience in ICL COBOL, knowledge of either DBS, ME26 or 2803 preferable.

Please telephone or write with brief details to the Personnel Officer, TIPS LTD, 2095 High Street, Waltham Cross EN8 7AY. Tel: Waltham Cross (0992) 33208. (5201)

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THE UNITED BANK OF KUWAIT LTD. ANALYST/PROGRAMMER

LONDON

To £14,000
+ Banking Benefits

The United Bank of Kuwait has been a dedicated DEC user for several years. The bank has recently upgraded to two VAX 11/780s one of which is solely deployed to development work. The position will be based at the bank's head office in the City at Lombard Street.

The successful candidate should have a solid programming background within a DEC environment to include at least one year with any VAX equipment. The ideal language would be MACRO 32 but the bank are prepared to retrain and therefore wish to interview analyst/programmers with MACRO 11 or any high level language. Applicants should be educated to a minimum of 'A' level standard and be good communicators but more importantly should have the ability and drive to join a small team of enthusiastic analyst/programmers working in a stimulating environment. Previous banking experience would be of special interest but by no means essential.

To find out more about this excellent career opportunity please contact SEAN ORSLER on 01-404 4821.

404 4821



Apex Computer Recruitment Ltd.

London Office: 59 Gays Inn Road, London WC1X 8TL. Tel: 01-404 4821.
Brussels Office: Rue Gotti da Gamond, 24. Ucd 1180 Brussels. Tel: 010 322 377 4193.

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You will already be a successful Sales/Marketing "Heavy" with significant experience in the computer industry (not necessarily Banking) and not afraid to get involved in large scale sales situations in the early stages. If you are ready for the responsibility to establish and grow something you can call your own then call Steve Parsonage now: - Ref: 1271

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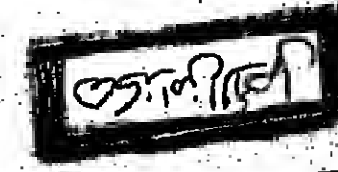
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RPG II/III

IBM SYSTEM 38
ADDITIONAL
To £13,500

Expanding software house based in North West Midlands requires ambitious young analyst/programmer or programmers to join their development team. System 38 RPG III experience is preferred, although they are prepared to train good IBM System 34/RPG II people looking to progress. Excellent salary. REF. C/2659

ANALYST/PROGRAMMER
To £11,000

Established manufacturing company, London based, requires an analyst/programmer with a minimum of 2 years' RPG II on IBM System 34's. The successful applicant will be assisting in the development of a range of commercial systems including ledgers, producing control and costings, should have strong liaison skills, and the ability to work within a small team. REF. C/2651

SYSTEM 38/BANKING
£8-12,000

International City bank, currently expanding its D.P. Department, has requirements at all levels for IBM System 38/RPG II professionals. Any experience of banking or general finance would be advantageous, and successful applicants will be well rewarded in terms of salary and a full benefits package including subsidised mortgage, cheap loans and non-contributory pension scheme. REF. C/2697

RPG II/RETRAIN TO RPG III
£8-9,000 Neg

Due to expansion to their Computer Department, this leading commercial company based in N.W. London require an additional programmer. The successful candidate should have a minimum of 12 months' experience either on the IBM System 38 or System 34 with either RPG II or RPG III. You will be working on development projects, utilising on-line and database facilities. REF. C/2695

IBM SYSTEM 38 CITY
£8-11,000

Highly successful financial brokers, are seeking to recruit 2 experienced IBM System 38 professionals. The senior position calls for an analyst/programmer with good technical skills gained within a GSI environment, with the ability to take projects through to implementation. The programmer should have 12 months' RPG III experience gained on the IBM System 38. For both positions candidates must have a good educational background with at least 1 year's exposure to RPG III. You will be well rewarded in terms of salary and benefits. Please call for more information. REF. C/2694

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CENTRAL LONDON
£12-14,000

First class career move for a competent senior analyst/programmer with experience on the IBM System 34/RPG II. The ideal candidate would have a number of years' D.P. experience and be able to take a project through to implementation. You must be self-motivated and presentable and willing to travel abroad quite extensively. You will be groomed into this management position. If you feel you have the right capabilities and experience for this first class position please ring me as soon as possible. REF. C/2592

IBM
OPPORTUNITIESIBM COBOL, DL/I
(INTERNATIONAL
TRAVEL)
HANTS
To £11,000

My client is offering an exceptional opportunity for a programmer/analyst to play a challenging liaison role throughout their European Sector. A minimum of 2 years' IBM MVS COBOL with DL/I is needed, together with the diplomacy required to liaise with European Managers. You will be installing a financial system in both the U.K. and Europe, and initial training will be given in the U.S.A. Annual bonus, health and life schemes and full relocation package is offered. REF. C/2314

PROGRAMMER/ANALYST
£11,000 + discount on travel

New IBM 4331, DOS/VSE, CICS and DL/I installation is offering a superb opportunity to an ambitious analyst/programmer. As part of a small team you will be expected to use your initiative, liaise with users and develop systems from very brief specifications. Two years' IBM COBOL is essential preferably coupled with some CICS and/or DL/I experience. As a subsidiary of a large group, they offer a discount on travel. REF. C/2692

Brushfield House, 12 Brushfield Street
Bishopsgate, London E1 6AN
Telephone: 01-247 3356 (24 Hours)

IBM COBOL
CITY
£9,000

Can you offer 18 months' IBM COBOL experience? My client, a leading international bank would like to meet you. They are currently running an IBM 4341, with DOS/VSE utilizing CICS. Applications are all of a Banking/Financial nature with exciting new development projects on the way. Excellent banking package including subsidised mortgage, STL and L.V.s. REF. C/2662

PROGRAMMERS/SENIOR
PROGRAMMERS
W/END
£8-11,500

Here is an opportunity to join a world famous organisation. My clients require additional D.P. professionals to work in a small support group and get involved with interfacing systems. The work is interesting and offers very good career prospects. If you can offer an IBM COBOL background under either DOS/VSE, OS/VS1 or VM/CMS, why not give me a call to discuss this exciting opportunity. REF. C/2693

PL/I PROGRAMMERS
CITY
To £10,000

I have been retained by a major international organisation to find IBM PL/I programmers with a minimum of 18 months' experience. The company house IBM mainframes under MVS and OS/VS1. Experience of either CICS or IMS and real time systems would be desirable as well as experience of working in a team environment. A generous salary is offered along with normal large company benefits. REF. C/2000

ANALYST/PROGRAMMER
PL/I
HERTS
To £11,000

Large multi-national organisation who are market leaders in their field, are currently in the process of developing new systems. They are looking for an IBM Analyst/Programmer who has experience with PL/I and on-line systems either gained with CICS, OL/I or IMS (although training given). This position is offering career prospects, exciting development projects and a pleasant and flexible working environment. REF. C/1910

OTHERS

HEWLETT PACKARD -
COBOL
To £9,500

This major international manufacturing organisation, has recently installed a network of HP3000 machines. They are currently seeking an Analyst/Programmer with upwards of 18 months' O.P. experience and at least 6 months' HP3000 COBOL expertise. Based in Berks, you will become involved in developing new financial and commercial systems. The successful applicant will be encouraged to do his/her own analysis and liaison duties. The package includes flexible time and 5 weeks' holidays per year. REF. A/2368

HEWLETT PACKARD
COBOL/SPL
To £11,000

Can you offer a minimum of 12 months' experience on HP kit using COBOL and/or SPL? My client, based on the Herts/Beds borders, is currently seeking programmers and analyst/programmers to play integral part in the development of demanding and exciting development projects that will include Financial, Accounting, Commercial and Manufacturing systems. MAGB, VIEW and RAPID would be assets, but are not essential at training will be given throughout your career here. There are also definite prospects for progression into analysis in the future. REF. A/1816

HEWLETT PACKARD -
ANY LANGUAGE
To £13,000

My clients, a highly respected financial organisation based in the centre of London, are expanding and currently they seek an experienced individual, hopefully with a minimum of 3 years' HP3000 expertise and analysis skills. You will immediately become a senior member of a team dealing in the development of new financial systems, to an extremely high standard. Image and View are essential although language is unimportant as full training will be provided. An above average salary is offered, together with an excellent bonus scheme and £250 L.V. a year. REF. A/1011

DEC/PDP/VAX BASIC 1.2
To £11,500

Applications are invited for Programmers and Analysts/Programmers with a minimum of 18 months' DEC and BASIC + 2 expertise to join this fast-expanding bureau organisation in the centre of London. Part of a multi-national conglomerate, my clients are embarking on a series of new projects in the commercial, financial and scientific sectors and seek ambitious individuals to carry this out. DEC/VAX expertise will be a definite asset, although training will be given to DEC/POP programmers where necessary. Call me now for further details. REF. A/2645

DEC/POP 11/23
EXEC & RELOCATION

My client based in Herts is currently seeking to recruit an ambitious individual within excess of 12 months' DEC/POP 11/23 experience. Training will be given in BASIC + 2 and MACRO II where necessary. You will become fully involved in developing highly sophisticated accounting and statistical packages, and the prospects are good for advancement into analysis. REF. A/2643

DEC/POP - FORTRAN
To £11,500

Do you have two or more years' FORTRAN experience on DEC/POP machines? My clients, a large industrial organisation, housing DEC/POP 11/70 under RSX-11-M, are seeking to recruit an Analyst/Programmer to develop a variety of packages including Graphics, Scientific and Engineering Applications. You will become involved in user liaison, system configuration, software design and programming in a challenging environment. Based in Kent, they offer an above average salary. Call me now for further details. REF. A/1528

TANDEM PROGRAMMER
£8-11,000

An opportunity has arisen within this well established London based company for an ambitious programmer with 12 months' + TANDEM/COBOL experience, to work in a financial environment. As they are currently expanding their programming department, this will mean an excellent career move for the right candidate. The total package includes top salary and full banking benefits. REF. M/2055

DATA GENERAL
£7,000 + Car

My client, based in Essex, is currently looking for a Programmer who fills the following requirements: 18 months' + Basic or Business Basic experience, to become involved in the development of financial packages. Successful applicants will enjoy challenging work on a variety of assignments plus top rewards and excellent career prospects. REF. M/2677

UNIVAC 1100-COBOL
To £11,000

My client, a London based concern, part of a well-known retail chain is currently seeking to recruit Univac Analyst/Programmers. If you can offer 18 months' + COBOL expertise, preferably in an on-line, database environment, you could be part of an expanding development team. Applications are of a menial nature and will involve Stock Control and Accounting. Benefits include bonus scheme, discount on products and flexi-time. REF. M/2678

WANG/ANY LANGUAGE
EXEC

An excellent opportunity to join this London-based company currently creating a new exciting package. They require at least 12 months' Wang VS experience with any language, and later your expertise will be required for user support and further development of other systems. Excellent opportunity for the ambitious individual who wishes to expand into analysis. REF. M/2671

BURROUGHS SENIORS
£12,000

This major software house is recruiting now for Burroughs Seniors to work in the London area. If you can offer in excess of 2 years' Burroughs experience in the programming and/or systems field and you are now looking to earn in excess of £12,000 plus excellent company perks, then contact me now for further details of these outstanding opportunities. REF. M/2660

ANY MINI COBOL
£9-13,000

An excellent opportunity has now arisen within this central London software house for an Analyst/Programmer with a good COBOL background. Text Instruments experience with DX10 would be preferred, but they will also consider good COBOL experience on other minis. Full company benefits package and promising career prospects for the right people. REF. M/2615

Technical
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- large-scale banking systems
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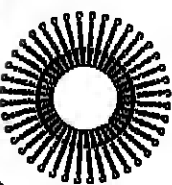
In meeting the challenges of international banking throughout the 80s, Chemical Bank is currently embarked on an aggressive strategy of international branch expansion. This involves IBM System 38, Database, integrated banking and communication systems, and microcomputer-based networked trading systems, utilising leading-edge technology.

We now require a Technical Manager to co-ordinate the design, development and programming of new data processing applications for the Bank's Overseas Branch System, and to provide technical guidance to Project Management and programming resources.

A minimum of 5 years' systems design and programming experience is essential, together with at least 3 years' experience of IBM System 38 facilities and technical attributes. A degree-level qualification is also required.

A highly competitive salary will be commensurate with experience, and a valuable benefits package including profit-sharing scheme, mortgage subsidy, personal loan scheme, BUPA, interest-free season-ticket loan and, if appropriate, assistance with relocation.

Please apply in writing with full details of age, qualifications, experience and current remuneration to the Personnel Manager, Chemical Bank, Chemical Bank House, 180 Strand, London WC2R 1ET.



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AIR CALL
communications

SOFTWARE ENGINEER

Air Call is an International Computer and Communications Service provider which makes extensive use of 8 and 16 bit microcomputers in both data processing and control modes.

A vacancy has arisen within the Technical Services Division of the Company for a systems software engineer to join the Engineering Department.

The position which is based at the Company's technology centre at Dunstable will require a working knowledge of microcomputer hardware, the knowledge of at least one high level language other than Cobol, the ability to program in assembler and a familiarity with real-time operating systems.

The successful applicant will ideally be qualified to degree level and will have the necessary experience and enthusiasm to turn an operational or technical requirement into a working system.

A salary in the range of £9-£10,000 p.a. is offered and assistance with relocation will be given where appropriate.

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DATATYPE RESEARCH FELLOW
to Computing Science

Applications are invited for a third year honours level research fellow to join the Department of Computing Science at University College Garden. The successful candidate will be responsible for the development of a research project in the area of data processing and the development of a research project in the area of data processing and the development of a research project in the area of data processing.

It is expected that the person appointed will have a good knowledge of data processing and the development of a research project in the area of data processing and the development of a research project in the area of data processing.

Applications from students should be sent to the Department of Computing Science, University College Garden, 20 Ave. St. George's, London WC1E 6BT. The closing date for applications is 15th September 1983. Further details can be obtained from the Department of Computing Science.

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(61785)

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(61785)

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If you are interested in this vacancy please contact Polly Keane, on Oxford (0865) 726136 or by letter, for an application form, quoting reference SS2/CWS.

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CIRCA £18K+ BENEFITS PACKAGE, OXFORD BASED

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The successful applicant will:

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- Achieve sales targets, primarily through high value multiple sales to government and large industrial, research, and commercial organizations
- Take over existing key customer accounts

We expect that your responsibilities over time will include recruiting and managing field sales personnel to support the development of this area.

The qualifications we are looking for are:

- A degree or equivalent
- The ability to negotiate high value sales at a senior level
- At least three years successful selling experience, preferably with a market leader in the computer industry
- Wide ranging understanding of hardware, software, and applications — a specific interest in the use of computers in training would be particularly valuable
- Good grasp of finance at corporate, institutional, and government levels

Research Machines is an established pioneer in a new industry and we offer opportunities for personal and career development in an environment which has high standards of professional and management practice. In addition to an excellent salary we offer a particularly attractive benefits package including car; 25 days holiday; free BUPA, life, and disability insurance; pension scheme and generous help with relocation expenses.

If you are interested in this vacancy please contact Polly Keane, on Oxford (0865) 726136 or by letter, for an application form, quoting reference SSEM/CW8.

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Surrey KT2 6RA
Tel: 01-547 57880 6

**PROGRAMMER
COBOL****to £9,000**

An opportunity has occurred for a Programmer with a South London organisation utilising VAX 11/780 for the development of large database systems. They require around two years' commercial applications experience using any structured COBOL, VAX COBOL being especially welcome. Flexi-time working, bonus and cheap pension scheme go to complete the company package.

**ALL LEVELS
ICL 2900****to £11,000**

A rapidly expanding Essex-based company has requirements for Analysts and Programmers through to Team Leader status. ICL experience which may include VME exposure is particularly relevant and at senior levels proven analysis or supervisory skills are necessary. Handling a large volume of the London insurance market, our client would especially welcome financial and insurance applications background. Benefits include profit share schemes and excellent promotion prospects.

**ANALYST/PROGS &
PROJECT LEADER****to £15,000**

Vacancies occur at various levels for persons with good BASIC, BASIC+, FORTRAN or similar programming backgrounds, preferably backed by working experience in a DEC environment. A proven project exposure involving the building of software for banking systems, data communications or message switching applications is desired as our client has a heavy commitment for development and support in all three areas. An attractive salary range, reviewed at six monthly intervals, supplemented by a generous company benefits package is offered.

**ANALYSTS
ICL 2966****to £12,000**

A major manufacturing company, based in Hampshire, utilising ICL 2966 under VME is seeking several Analysts to augment its development teams. A commercial or financial applications background is required and exposure to ICL hardware is desirable. Every opportunity for advancement is available to Analysts with two or more years' experience within this market leading company.

**ANALYST/PROGS
BURROUGHS****to £11,500**

C. London company is currently looking for Analyst/Programmers to join their expanding team working on a variety of financial applications. Applicants should have around three years' COBOL to include 18 months' exposure to BURROUGHS systems. Any CMS experience will be of particular interest to our client. Successful candidate will enjoy a good deal of client contact and must be professional in both appearance and attitude. Good prospects and working conditions are offered.

**SALES SUPPORT
LONDON****£14,000+**

Expanding company are seeking experienced DP personnel to join their sales/support team. Applicants will probably have spent around eight years in DP, preferably with a manufacturing or accounting applications background, together with some pre- or post-sales support exposure. They should also have feasibility study and project management experience. As well as an excellent starting salary, benefits include a company car or generous car allowance, profit share and an interesting and challenging position.

**PROG & SNR PROG
HP 3000****to £11,000**

Software house with an excellent reputation in the HP market seeks a Programmer and Senior Programmer due to planned expansion. The senior position requires three years' COBOL with knowledge of IMAGE and VIEW and the Junior around 18 months. This is a good opportunity to work on a variety of projects and applications and for the senior the possibility of moving into analysis at an early stage.

**ANALYSTS
C. LONDON****to £15,000**

We have been retained by three London-based companies to find Analysts with varying levels of experience. A sound DP background is required with exposure to pension, payroll, insurance or accounting applications. Two of the positions are particularly interesting as they offer the chance for the Analysts to work in a consultancy role with a good deal of client contact. As well as good starting salaries there are varied and include annual bonus and mortgage subsidy.

**GSO PROG/ANALYSTS
RPGII/RPGIII****£NEG**

We have many clients, all SYS 34 or SYS 38 users, who have current requirements for Programmers and Analysts. Applicants should have a minimum of six months' RPG gained in a commercial environment through to three years' + for the more senior consultant positions. The companies range from banking to manufacturing and offer a wide variety of benefits.

404 4821

Apex**Apex Computer Recruitment Ltd.**

London Office: 59 Grays Inn Road, London WC1X 8TL. Tel: 01-404 4821.
Brussels Office: Rue Gatti de Gamand, 24, Uccle 1180 Brussels. Tel: 010 322 377 4193.

How many Analyst/Programmers do you know who work for some of the UK's biggest names?

Baric, jointly owned by ICL and Barclays Bank is one of the most successful computer service companies in the UK.

We're now looking for young Analyst/Programmers in their mid 20s currently seeking new challenges and an opportunity to move upwards in their career.

You should be interested in developing your technical skills in an environment where business awareness is as important as the technology. The work involves considerable customer contact in the solution of their specific problems.

We can offer a technically advanced site with a fantastic range of equipment including six ICL 2966s.

If you have 3 years' experience of COBOL on ICL mainframes, have worked in G3 DME or VME 2900 -- knowledge of FILETAB useful though not essential -- and have a degree, this is your 'open door' to a more dynamic environment than any we know of. Just what the highly motivated computer professional will appreciate, working with minimum supervision. If you like working to deadlines, organising your own priorities, we'll offer you a salary in the region of £10,000 plus a range of large company benefits.

Ready for the offer? Write with a full c.v., or 'phone for an application form, to Miss Barbara Parsons, Baric Computing Services Ltd., Forest Road, Feltham, Middlesex. Tel: 01-890 1414 ext. 231.



An ICL Barclays Bank Company

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clients have created an elite Research Department and require creative people who can formulate concepts and translate them into commercially viable products.

Projects will include Artificial Intelligence and Knowledge Based Systems, Speech Recognition and Synthesis Systems, and Integrated Optics for Sensors and LANs.

Opportunities exist at all levels for professionals with the ability to make a positive contribution to new product and technology development.

Salaries will reflect the importance of these positions and full relocation expenses are available for those moving to this very attractive area where houses and cottages are still sensibly priced.

For an informal local discussion telephone, in confidence, IAN on Bristol (0272) 277195 or alternatively write enclosing details to:

The Recruitment Partnership
of Park Street, Bristol, BS1 5NU
Tel: 0272 277195

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"Do you have a minimum of one year's COBOL programming experience, gained in a commercial environment?" If so, this will open the door into the stimulating world of an expanding software house.

SURREY **to £9,000**

Take this opportunity to become involved in all aspects of software development on new projects on a range of ICL and other equipment. Previous experience in an ICL environment would, therefore, be an advantage. Promotion prospects within the company are excellent.

The company is based in SURREY, with easy access from the M23. In addition to the excellent salary, the package includes free life assurance and subsidised pension and BUPA.

Interested, then contact Computant Limited Recruitment Agency, 14 Mount Pleasant, Tunbridge Wells, Kent. Telephone: (0892) 35712/3/4. 24 hours answer phone.

Computant

PROJECT LEADER **CITY** **Circa £17,500**
Must be experienced in controlling projects from inception to sign off. A tight methodology is employed so a strong technical background is essential. The position offers good advancement potential and the considerable benefits of a major financial institution including subsidised mortgage. REF: WB 12/8

IBM PROGRAMMERS **BRIGHTON** **Circa £10,000**
Very basic Cobol programmers with 2 years experience. This position offers great potential for development and advancement. Substantial company benefits include subsidised mortgage. REF: WB 10/8

BURROUGHS PROGRAMMER **CITY** **Circa £12,000**
MCP Cobol programmer who has a desire to move into Analysis. Good advancement potential and substantial company benefits including subsidised mortgage. REF: WB 11/8

IBM PROGRAMMERS **LONDON NW** **Circa £12,000**
Cobol programmers preferably with DOS/VSE/CICS, but will train if necessary. A very good opportunity for technical advancement. Considerable company benefits and perks are available. REF: WB 13/8

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Contracts

**IBM**

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IBM CICS Total Environ/1 programmers
IBM IMS DB/DC systems analysts
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IBM CICS DL1 Cobol programmers
IBM System 3 Systems analysts
IBM 4341 DL1 CICS senior analysts
IBM System 38 RPGII programmers -- various
IBM 8100 DPPX Cobol programmers
IBM VM TP System programmers
IBM 34 RPGII programmers

BURROUGHS

Burroughs 68/6900 DMS GEMCOS Cobol programmers

TANDEM

Tandem designers, programmers, analysts -- various

DEC

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VAX Datatrieve Cobol programmers
System VAX VMS with Systel Cobol programmers -- very urgent!
VAX VMS Cobol programmers
VAX Mascot Coral 66 programmers

ICL

ICL 2900 VME/IDMS Cobol programmers
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ICL 2900 IDMS database designer/programmers
ICL 2900 VME base support programmers
ICL 1900 VME/DME Cobol analyst/programmers
DRS CICS Cobol analyst programmers
ICL System 10 and 25 programmers UK and Florida, USA
ICL 2900 VME operations consultant -- urgent!

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PUBLIC SECTOR APPOINTMENTS



Cheshire
Department of Highways
and Transportation

ANALYST/PROGRAMMER SCALE 3/SO1 - £5840-£9680

The Department seeks two programmers to join its Computer Services team. A system for planning and controlling the work of the County's direct labour organisation is nearing completion and is due to be augmented by facilities which will store and analyse information about the structure and performance of the County's roads.

The Department uses DEC VAX11/750 computers with a network of terminals within headquarters and in divisional offices throughout Cheshire. Programming is in ADMINS-U32, a modern high level development system.

Applicants will be trained in VAX and ADMINS. They should have an appropriate degree or equivalent qualification, linked with an interest in business systems as well as in the technical applications of the department.

Application forms and further particulars obtainable from The Personnel Section, Department of Highways and Transportation, Cheshire County Council, Beckford Hall, Nr Chester. Telephone Chester 59208.

Closing date 9th September, 1983.

(1519)

OXFORD POLYTECHNIC

DEPARTMENT OF MATHEMATICS STATISTICS & COMPUTING

A number of Research Studentships are available, leading to MPhil (CNAA) in the area of Computer Graphics for Teaching Methods in Statistics and Computing using the Apollo Computer System.

Applicants should normally either have, or expect to obtain, a good honours degree in a computer-related subject. Further details of these studentships and other research in the Department are available from the Postgraduate Tutor.

Salary Scale Researcher A, starting point £4,547.

Applicants should state the project of interest, include a curriculum vitae and the names of two referees and send the applications to: The Postgraduate Tutor, Department of Mathematics, Statistics and Computing, Oxford Polytechnic, Headington, Oxford OX3 9DF. Closing date 31st August, 1983.

(15087)

PROGRAMMER CENTRAL LONDON £7,578-£9,030

(Starting salary according to experience and qualifications)

The LOCAL AUTHORITIES CONDITIONS OF SERVICE ADVISORY BOARD (LACSAB) wishes to recruit a young programmer or statistician to help design, process and analyse pay and manpower surveys; set up information retrieval systems; and provide general statistical advice. LACSAB has eight MB Winchester disc microcomputers linked by private line to a leading mainframe bureau (CDC & IBM).

We require a person with at least a second class honours degree. At least one year's programming experience is essential, as is a good knowledge of Fortran and statistics. Experience of standard statistical packages (e.g. SPSS, SIR) would be an advantage.

LACSAB advises local government on manpower matters; collects, analyses and circulates pay and manpower data; and provides the employers' secretariats to the national negotiating bodies which determine the pay and conditions of over two million employees.

For further information and application form contact Mrs Carolyn O'Brien, Research Section, LACSAB, 41 Belgrave Square, London SW1X 8NZ. Telephone 01-235 6081 ext 208. Completed application forms should be returned to LACSAB by 9th September.

(15121)

FINANCE

COMPUTER OPERATOR

Salary £5808-£9300 ± 14% shift allowance and £183 local weighting. Reference number CP209.

Applications are invited from experienced IBM or NCR operators to join the operations team based at County Hall and working a 5-day, 2-shift rota with opportunity for paid week-end and overtime working.

The County Council, an established NCR Criterion user, has recently installed an IBM 4341 using VM, CICS/VSE and CICS to provide the base for future computing requirements. The IBM 4341 supports a rapidly growing network of local and remote terminals and will form the centre of the office automation and information processing projects being developed.

Attractive working conditions in modern offices, with good restaurant facilities.

Applications (no forms) giving full details of education and previous work experience, quoting the job reference number, together with the names and addresses of two referees, to The County Treasurer, County Hall, Hertford, by 31 August, 1983.



**Hertfordshire
County Council**

(15121)

Yorkshire Regional Health Authority REGIONAL COMPUTER CENTRE - HARROGATE

The RCC provides a comprehensive service to users in 16 Health Authorities and has a number of vacancies for qualified and experienced staff. A new computer centre is in operation working on an ICL 2988 with extensive communications capabilities together with various makes of micro/minis.

The computer applications cover a wide range of activities including medical, hospital administration and financial control, all of which may be provided on the above hardware.

Senior Systems Designer/ Programmer

(Scale 9) - Ref AC24

A sound educational background together with three or more years' practical design experience and a total of at least six years' computing experience is needed.

Formal training in systems design and/or programming is desired and applicants must have proven capabilities in developing or writing large applications. A good knowledge of large mainframe mini or micro computers will also be necessary together with experience of programming in COBOL, BASIC or FORTRAN. Structured design is used in all areas of work.

Systems Designer/ Programmer

(Scale 4) - Ref AC25

Both posts will cover the same type of work as the Senior Systems Designer/Programmer although at a lower level. The requirements however are for similarly educated people with at least two years' practical experience excluding training and the ability to design and program (ie using COBOL, BASIC or FORTRAN) major programs or sections of systems.

Salary Scales

Scale 9 £8367-£10,277 p.a. plus Proficiency Allowance

Scale 4 £7404-£9025 p.a. plus Proficiency Allowance

Application forms and job descriptions are available from the Regional Personnel Officer, YRHA, Park Parade, Harrogate HG1 5AH. Telephone: (0423) 88081 ext 108/109.

Please quote the appropriate reference number.

Closing date: 8 September 1983

(15171)

UNIVERSITY OF NEWCASTLE UPON TYNE PROGRAMMER

The University Administration requires a programmer to fill a newly established position within its Data Processing Unit.

The Administration has a SYSTIME 6400 (PDP11/44) mini-computer operating under RSTS/E using BASIC-PLUS as the programming language.

This appointment will follow further consideration of an already extensive number of on-line interactive systems concerned with financial, staff and student records.

Applicants should ideally have experience of a similar computing environment.

The appointment will commence as soon as possible and the salary will be at the appropriate point on the Administrative Grade (A scale: £5310-£11,016 p.a., according to age, qualifications and experience).

Further particulars may be obtained from the Deputy Registrar (P.P.), The University, 8 Kensington Terrace, Newcastle upon Tyne NE1 7RU, with whom applications (2 copies together with the names and addresses of three referees to whom reference may be made, should be sent not later than 23rd September, 1983.

(15148)

LECTURER IN COMPUTING STUDIES (TEMPORARY)

Applications are invited for the above post in the expanding School of Computing Studies and Accreditation. The post is for the period up to 31 August 1984 and commencing as soon as possible after 10 September 1983. Applicants should have a good honours degree and either a postgraduate qualification or significant industrial or research experience. Specialists in any field of Computer Science are encouraged to apply but some preference will be given to good applicants with interests in one of the following: programming languages; compiling; data structures; theory; O.R. or numerical analysis. Salary will be in the range £7190-£14,125 per annum.

Applicants (three copies) giving full particulars of age, qualifications and experience, together with the names and addresses of three referees to whom reference may be made, should be sent to the Establishment Officer, University of East Anglia, Norwich NR4 7JL (telephone 0693 56181 ext 2128) from whom further particulars may be obtained, not later than 8 September. No forms of application are used. The closing date of the deadline for the receipt of applications is 23rd September 1983. Telephone 0693 56181 ext 214.

(15153)

DISTRICT TREASURER'S DEPARTMENT

Senior Analyst/Programmer Salary on Grade PO1 (1-8) - £9945-£11052 per annum + £270 London Weighting

Applications are invited for this newly created post within the computer section of the Treasurer's Department. The Council is in the process of obtaining a Honeywell DPS 8/76 and is a member of a consortium of eight districts linked to the DPS 8/52 Honeywell mainframe of Essex County Council.

It is likely that the successful applicant will have had at least 3 years' programming experience complemented by a year of system analysis. Though not essential experience of Honeywell DPS 8 installations including TPS and or Screenwrite would be an advantage.

Situated in the south of Essex, the district incorporates the major portion of Epping Forest and is served by the M11 and M25 as well as offering Central Line access to the heart of London.

Housing and relocation expenses will be considered in appropriate cases.

Application form and job description may be obtained from District Personnel Officer, 323 High Street, Epping, Essex CM16 4BZ. Telephone Epping 77344. Ext. 201.

Closing date: 7th September 1983

Please quote T/248

Epping Forest District Council

(15194)

Programmer

Salary £8337-£8895 per annum inclusive
(Scale 6)

Applicants should have been employed for a minimum of one year as a COBOL Programmer preferably in a VME environment. It is also desirable that he/she has experience of I.D.M.S. as the postholder will take part in the development of database projects.

Where applicable training will be given. Benefits include:

- ★ Staff Productivity Scheme
- ★ Flexible system of working hours
- ★ Housing accommodation if appropriate and/or Relocation expenses paid.

Job details and application forms are available from the Management Services Officer, Council Offices, The Campus Welwyn Garden City, Herts AL8 6AE. Tel: WGC 31212 Ext 413.

Closing date Friday, 2 September, 1983

Welwyn Hatfield District Council

(15170)



POLICE COMPUTING

SYSTEMS PROGRAMMER

SO1/2 - £9,060-£10,539 p.a.

To work chiefly on the operational systems of the computer project branch based at Force Headquarters in Streteford, Manchester.

The Greater Manchester Police is one of the largest forces in the country with a comprehensive programme of computerisation. It is currently developing a number of major systems which will play a significant part in assisting the operational and administrative efficiency of the force. These include a data network linking headquarters to divisions and sub-divisions, message switching, criminal records, personnel, stock control, central ticket office, word processing and other office systems. Other applications planned for the future include command and control, street index and an interface to the Police National Computer.

Applicants should have experience of large on-line applications and have been a shift leader or equivalent.

For an informal discussion phone Mr Softley, Deputy Project Leader, on 081-798 9857 ext. 303.

Application form and further details available from Departmental Management, County Treasury, County Hall, Piccadilly Gardens, Manchester.

Closing date: 2nd September.

The Greater Manchester Council is an Equal Opportunity Employer.

(15083)

DP SUPERVISOR

£10,500 BASIC + 15% Bonus

Our client, INMAC are shortly to open their WEST LONDON Distribution Centre and need an experienced person to manage new Data General equipment. Candidates in their late 20s must possess the appropriate skills.

Please apply to Peter Barnett quoting CW8208 at Barnett Consulting Group Ltd., Providence House, River Street, Windsor, Berkshire SL4 1QT. Tel: Windsor (07535) 58723

(15191)

CONTRACTS

IBM SYSTEM 34 RPG II ANAL/PROG.

LONDON

IBM COBOL IMS DB/DC ANAL/PROGS.

SURREY

DEC DIBOL C.T.S. 500 ANAL/PROGS.

KENT

VAX/VMS DIBOL SENIOR ANAL/PROG.

LONDON

ADF PROGS.

SURREY

For further details contact NIC POLAND TLP

A division of Tate & Lyle Industries Ltd.
Leon House, High Street, Croydon CR9 3NH

A member of the Tate & Lyle PLC Group

(15191)

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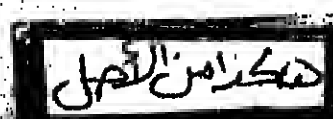
There is continuous development and consultants with strong manufacturing or accounting package experience are required to be instrumental in realising planned growth targets.

Candidates must be high-achieving, confidence inspiring managers who can communicate effectively at all levels.

Salaries and benefits reflect the importance of these positions and successful candidates will enjoy the support of an internationally recognised organisation.

Please contact Brian Postles.

CADsearch, London House,
271-273 King Street, London W6 9LZ.
Telephone: 01-741 8011



CADsearch

REAL TIME SOFTWARE SPECIALISTS £8K-£20K

You may have as little as 2 years experience, providing that experience is concentrated in one particular field of computing. Of course, if you have several years experience you may have in-depth knowledge in more than one area of application. The point we must stress is that our clients who are users, computer manufacturers, consultants and systems houses, seek specialists not dabblers.

Locations are: London, Home Counties, other parts of England, Scotland and overseas too.

Status: All levels from Programmers, Software Engineers/Designers up to Principal Consultants and Managers.

Areas of applications in which we seek specialists are: Communications (all manner of), Communications Protocols, Data Acquisition, Process Control, Command & Control, Intelligence Systems, Databases, Compiler Design, Software Tools, Operating Systems, UNIX, ADA, Military and Defence Systems, Simulation, Image Processing, Expert Systems, EPOS Mascot, Context, CAD/CAM Systems.

We are particularly interested in those experienced with PDP/11s, VAX, Argus, Data General, Intel, Motorola, using ASSEMBLER, CORAL, PASCAL, RPL/2, FORTRAN.

If you are educated to degree level and have specialised, perhaps in a field we have not mentioned, please contact Beryl McLaren, any hour of the 24, you'll get a personal reply, not a recorded message.

01-836 9719

PS. We may be able to assist this years graduates who have 1st class honours degrees.



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Industrial, Scientific, Defence
and Technical personnel

Computer Appointments

12-13 Henrietta Street, London WC2

Data Processing Controller Manufacturing Environment £9,000-£10,000



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Howard
Designs Ltd.

This isn't a job for everyone, because working with our client you get to do it all. At least in the early days.

They make and design furniture. And they're very good at it. Sales are around the £5,000,000 mark, they employ ninety people, and they're growing.

The company's partly computerised and aiming to go all the way. The existing installation is an ICL System 10 Mini. It handles sales order processing, sales ledger, dispatch scheduling, inventory control and costing. Over the next couple of years, with your help and advice, they'll be installing a more powerful computer to handle these and other systems like material requirements planning, production control and an integrated financial ledgers system.

You'll have a VDU operator reporting to you and that's it for the moment. You're the computer operator, you run the department and make sure management has the information it needs. You'll also be responsible for the implementation of these new systems.

It's an important job and likely to get much more so. They need someone who can grow with the company and work under pressure.

You will probably be between 25 and 38.

You must be prepared to knuckle down to the nitty gritty and have the ability to expand the department in line with their growth.

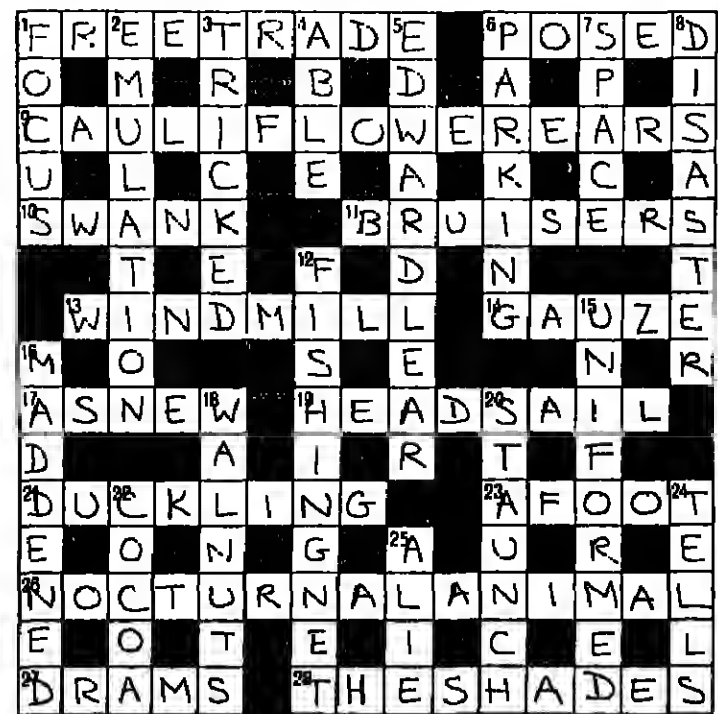
Think you could handle it? Then telephone Amanda Dean on 01-549 9236 (24 hour answering service)

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Sloangate
Recruitment Advertising

(15064)

Solution to Prize Crossword No 43



This month's £10 first prize goes to Frank Barber, a systems programmer with Lyons Bakery in Carlton, near Bernalsey. Prizes of £5 each are being sent to David Allen, analyst/programmer with Valence in Leeds, and Tyrell Brockbank, chairman of OTEC in Durham.

★ TRAIN IN USA ★ CUSTOMER ENGINEERING

Leading multinational manufacturer, secure and fast-growing, seeks keen young Engineers to train on special systems and advanced techniques. Sound electronic background essential - disk experience a bonus. Excellent training (US/Europe/UK). Benefits include realistic salaries (£8½-20K+car, o/t, etc.), friendly management, assured career advancement, regular reviews, etc. Opportunities NOW in London, Home Counties, Midlands and North-West. OTHER OPPORTUNITIES: Engineers with exp. of DEC/DG/P-Elmer/lookalikes, etc. for London/Home Counties; and Data Comm exp. for E Anglia.

Whatever your requirements - expand your career NOW - RING MIKE HILL ON 01-549 6441 (Office) or 01-394 2399 (outside office hours and weekends, etc.).

db executive (kingston) ltd

If you've experience of working with VAX or PDP systems under VMS or RSTS/E come to DIGITAL...and start succeeding

Digital is the world's no. 1 minicomputer manufacturer, with an advanced range of best-selling systems and a number of major new product launches in the pipeline. We are obviously looking forward to a very successful future and in line with our continued growth, we are now looking to strengthen the team in our Field Service Data Centre based at our UK Head Office in Reading, where we are about to add a new VAX 11/780 to our existing PDP 11/70S. To be more specific, we need the following people:

Systems Support Analyst

Reporting to the Data Centre Manager, you'll join the Field Service Operations Group at this modern facility. Within this team, you'll be responsible for the implementation, maintenance and technical support of software for distributed systems at our field service branches throughout the UK and Ireland, as well as the support of systems run at the Centre. The role will obviously necessitate liaison with Branch personnel for which some travel will be necessary.

Computer Operator

Reporting to the Operations Supervisor, you'll work closely with the Senior Operator in the day-to-day running of the Centre's systems and applications. With the impending arrival of a new VAX 11/780, you can expect to be involved in helping to run this impressive system. To match our expectations, you should be a competent operator with at least 12 months' experience of running VAX or PDP systems under VMS or RSTS/E. REA/7C3/583.

For both of the above positions, the rewards of joining Digital are excellent. We offer attractive salaries backed by a full range of valuable benefits including pension and life assurance schemes, sports and social club as well as a subsidised staff restaurant. And for the ambitious, the prospects for rapid career

development within our successful and expanding organisation are excellent. If you'd like to work with Digital, write giving brief career details to: Stewart Townsend, Data Centre Manager, Digital Equipment Co. Limited, Digital Park, Reading, Berks. Tel: Reading (0734) 883711 ext. 3870.

digital

PL/1 PROBLEM SOLVERS

If you're the kind of problem-solver we are looking for, we can promise to introduce you to some programming puzzles that will stretch your mind and imagination - not to mention your career horizons!

The client we will want you to meet is a professional computing group some 300 strong with ambitious plans to expand over the next few years.

Check your experience against the following specs...

PL/1 Programmers

To £10,000 p.a.

If you have 18 months or more experience in a maintenance and/or development environment this could be your chance to join a leading development team. Training in VMS will be provided.

Senior PL/1 Programmers

To £12,000 p.a.

This is an opportunity to upgrade your career to date. The position offers the opportunity to assume both project and/or staff responsibility. The main entry requirement is a good programme development background.

Software Group Leader

To £15,000 p.a.

Software Design Consultant

To £15,000 p.a.

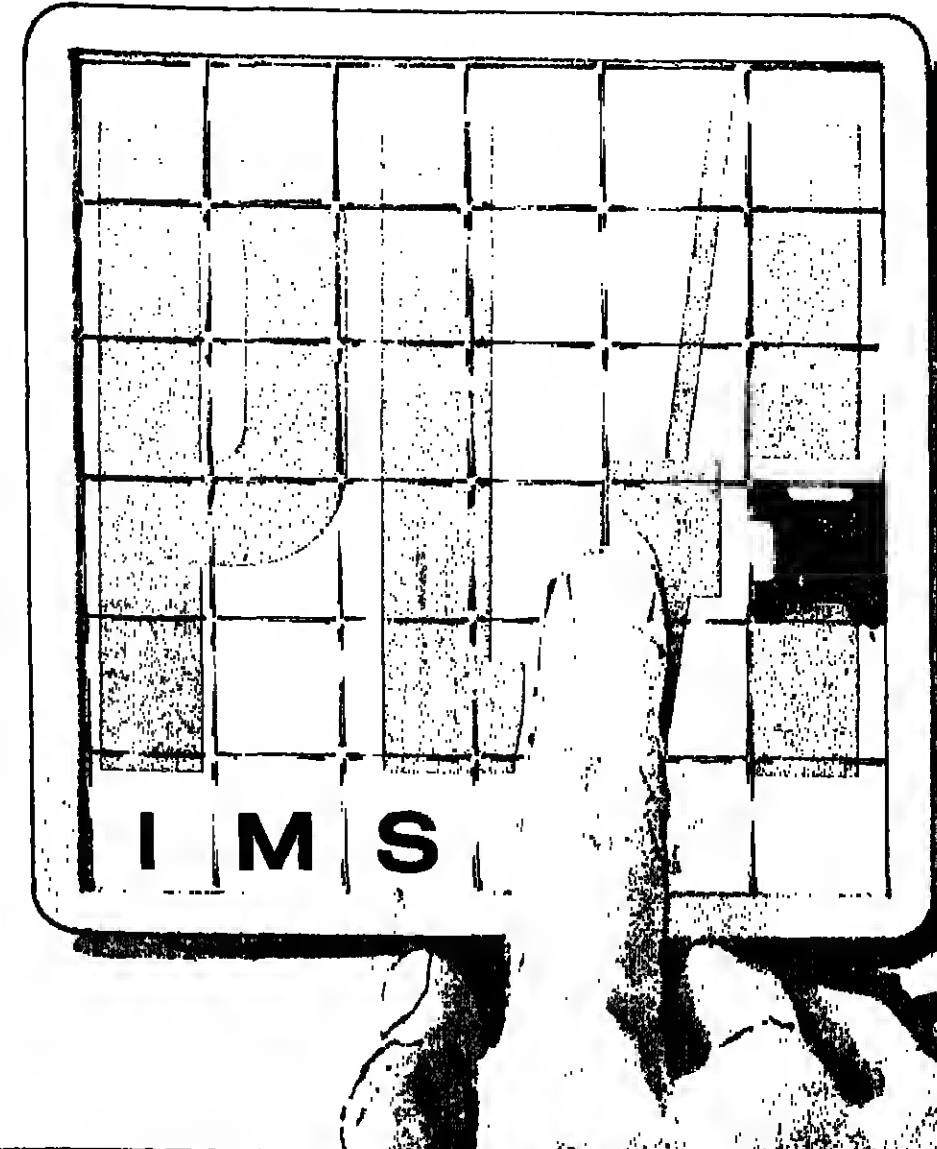
If you have 5 years PL/1 experience and a talent for good design in either a commercial or technical environment these positions carry with them a high level of technical management and/or consulting design responsibilities, and will provide the kind of challenge you have probably been missing!

The company is located in custom built offices in Hertfordshire approximately 30 miles out of London (commuting is possible) and programming groups have at their disposal a wealth of computing power including AMDAHL V8, 4341, 370/158 under MVS and VM, supporting IMS and SMP.

In addition to highly competitive salaries there's a weighty benefits package including full relocation where applicable.

Interested? Then contact Colin Hush or Jack Cowdy on 01-838 1804 office hours to 6.30 p.m. for a preliminary discussion.

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Telephone 01-838 1804 Telex 22861



RECRUITMENT CONSULTANCY

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